METAL INDUSTRY

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ELECTRO-PLATERS REVIEW

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Electro-Platers Will Meet in Bridgeport

The Twenty-Third Annual Convention of the American Electro-Platers' Society in Bridgeport, Conn., June 10-13th. Special Exhibit of Equipment, Supplies and Plated Work

BRIDGEPORT, Conn., will be the center of interest in electroplating for the week of June 10th. The occasion for this concentration of attention will be the 23rd Annual Convention of the American Electro-Platers' Society in that city, with headquarters at the Hotel Stratfield, and a special exhibition of electroplating equipment and supplies and electroplated products at the Mosque Temple.

Bridgeport is a fortunate choice for this convention. It has long been known as the "industrial capital of Connecticut". It possesses attractions which are rare in cities built on manufacturing. It has a beautiful location on Long Island Sound, attractive parks, unexcelled bathing beaches, fine homes, good hotels and restaurants and excellent accommodations for visitors. To these attractions we must add the basic fact that it is one of the leading industrial manufacturing centers with 50,000 wage earners and an annual output of manufactured products of over $170,000,000. Many of the leading makers of metal products have their headquarters or large branch plants in Bridgeport, such as the Singer Sewing Machine Company, Remington Arms Company, Columbia Phonograph Company, Bridgeport Brass Company, General Electric Company, Remington-Rand, Inc., Underwood-Elliott Fisher Company, Crane Company and so on in considerable numbers.

Hotel Stratfield, Bridgeport, Conn.

An event of real historical importance adds to the fitness of the choice of Bridgeport for this convention. In this year 1935, Connecticut celebrates her Tercentenary. Connecticut is rich in historic interest and many of its towns have permanent landmarks of Revolutionary days.

The American Electro-Platers' Society

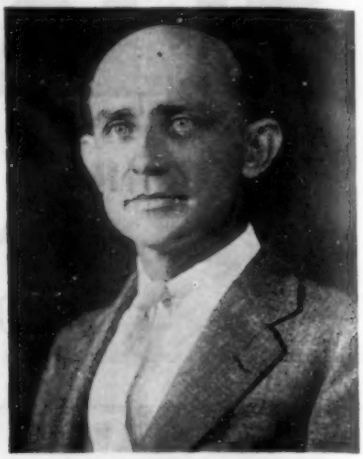
The American Electro-Platers' Society was established in 1909 with the object of advancing the art of electroplating through the joint efforts of those engaged in the industry. Its history has been one of steady and almost uninterrupted growth, constant personal improvement of its members and rising standards of workmanship. Membership is open to experienced electroplaters in responsible charge of operations and executives and chemists engaged in electroplating work. It has branches in all of the principal industrial centers of the United States all of which hold regular monthly or semi-monthly meetings at which scientific and practical information is exchanged. The National Society holds an annual convention each year. The membership to-day totals about 1500.

The present officers of the American Electro-Platers' Society are as follows:

President, **H. A. Gilbertson,** Chicago Branch.
Vice-President, **Joseph Underwood,** Philadelphia.
Second vice-president, **Thomas F. Slattery,** Baltimore, Washington.

H. A. GILBERSTON
President, A. E. S.

T. F. SLATTERY
Vice-President, A. E. S.



JOSEPH UNDERWOOD
Vice-President, A. E. S.

Secretary-treasurer, **E. Steen Thompson,** Cleveland, Ohio.

Editor of The Monthly Review, **W. J. R. Kennedy,** Hartford, Connecticut Valley Branch.

The Bridgeport Branch which has made all arrangements for this convention has the following officers:

President, **Joseph P. Sexton,** 61 Trumbull St., West Haven, Conn.

Vice-President, **Joseph Sterling,** 134 Colony St., Bridgeport, Conn.

Sec'y-Treasurer, **Charles H. Costello,** 1285 Boulevard, New Haven, Conn.

Librarian, **Walter Raymond Meyer,** 13 Winthrop Court, Milford, Conn.

Sargent-at-Arms, **William G. Stratton,** 153 Elm St., Bridgeport, Conn.

Board Managers: **John C. Oberender,** 37 Seaview Ave., West Haven, Conn.

William Thompson, 145 Third Ave., Stratford, Conn.

Ben Kusterer, 126 Summit St., Bridgeport, Conn.

The General Committee controls all convention arrangements. It is composed of the Chairmen of the special committees on different activities. The Chairman of the General Committee is **R. J. O'Connor.**

The members of the special committees are as follows:

Educational Committee

George B. Hogaboom, **Chairman**
Charles Costello
Walter Rowe
Walter Meyer
Thomas H. Chamberlain
Raymond J. O'Connor
William Bridgett
Joseph Downs

Visitation Committee

John Oberender, **Chairman**
F. Lancaster
John M. Barry
Benjamin F. Kusterer
Phillip Willett

Reception and Registration Committee

William Bridgett, **Chairman**
George G. Knecht
Joseph Downs
Robert E. Mooney
B. A. Moran
John Oberender
John English
Thomas H. Chamberlain

Advertising Committee

George G. Knecht, **Chairman**
Charles Costello
Joseph Sexton
William Flaherty

Publicity Committee

Eugene Phillips, **Chairman**
John Beloin
Leroy Brown
Charles Walsh

E. S. THOMPSON
Secretary-Treasurer, A. E. S.

W. J. R. KENNEDY
Editor, The Monthly Review

Banquet Committee

John English, **Chairman** Elmer Munson
Albert Jaekle George Wagstaff
William Ehrencrona

Transportation Committee

Fred Norgren, **Chairman** John Brown
Wm. Stratton William Thompson
Joseph Sterling

Entertainment Committee

George Morrow, **Chairman** Herman Brown
M. F. Dunleavy Albert Rosenthal

Exhibit Committee

R. T. Phipps, **Chairman**

Visits

One of the attractive features of every convention is the program of visits to important manufacturing plants. This year's convention is peculiarly fortunate in having open to it three of the largest and best factories of their kind, the American Tube and Stamping Company, the Bridgeport Brass Company and the International Silver Company.

The American Tube and Stamping Company, which was purchased by the Stanley Works in 1926, has been carrying on an extensive program of modernization. The principal product is hot rolled strip steel, but it also produces billets and cold rolled steel. Electroplaters will find it extremely interesting to see the process of manufacture of the base metal upon which such a large proportion of their work is done.

The Bridgeport Brass Company is one of the largest independent brass and copper mills of the United States. During its 69 years of steady growth, it has pioneered in the development of the highest quality of brass and copper fabricated alloys and their products. It was one of the earliest to adopt electric melting and has pioneered in many other improvements, mechanical in character, in the production of sheet, rod, wire and tube.

The International Silver Company plant at Meriden, Conn., is one of the world's leaders in the production of flatware and hollowware. The history of its early days is interestingly traced together with the history of silver plating as an industry, in an article on page 202 of this issue, on "Early Silver Plating in America."

Transportation

The above named committee has prepared every detail so that visitors will find all conveniences ready for them. Regarding transportation, the railroads are furnishing special convention rates, (provided at least 100 certificates are issued). Everyone should take special pains to obtain a certificate (not a receipt) from the ticket agent at the time of purchase of the ticket to Bridgeport. This certificate will be validated at the convention headquarters and the holder will be entitled to the return trip at a fraction of the regular rate.

Hotel Accommodations

Members and visitors are urged to register at the headquarters of the convention at the Stratfield Hotel, immediately upon arrival. There are other hotels also which will provide adequate and comfortable accommodations. The Strafield has several hundred rooms at rates from $3.00 to $4.00 for single rooms and $5.00 to $7.00 for double rooms with bath. The Barnum Hotel has a variety of accommodations ranging from $2.50 for one person up to $6.00 for two. The Stratfield Annex takes care of transients at the rate of $1.50 for one up to $3.50 for two.

THE GENERAL CONVENTION COMMITTEE

Back Row, Left to Right: W. Bridget, G. Morrow, R. T. Phipps, John English, J. Downs "pinch-hitting" for G. Karl, R. Mooney "pinch-hitting" for F. Norgren, J. C. Oberender and G. B. Hogaboom. Front Row: G. Phillips, T. H. Chamberlain, Mrs. R. J. O'Connor, R. J. O'Connor and G. Knecht.

General Entertainment Features

A varied program of social and recreational events has been arranged to fill in the few nooks and corners not taken by technical, educational and business sessions.

On Monday night, June 10, the International Fellowship Club will hold its annual Open House party in the Jungle Room at the Hotel Stratfield. Special entertainment features have been provided and it will be the best Open House ever held. Everyone who registers is invited to this party, and will be provided with a ticket upon registration. There will be no charge of any kind as the Open House is given freely by the Fellowship Club to all members of the American Electro-Platers' Society. The fact that the arrangements have been taken care of by John Oberender makes it certain that the party will be a great success.

Tuesday afternoon will be devoted to recreation and relaxation at the Seven Gables Inn. A buffet lunch will be followed by athletic events, games for the ladies and the annual baseball game between the eastern and western baseball teams, after which a shore dinner will be served.

The outstanding social event of the week will of course, be the Annual Banquet on Thursday evening at the Stratfield Hotel with a fine program of entertainment followed by a dance. Nothing has been spared to make this an event long to be remembered.

A number of the members of the American Electro-Platers' Society are golf addicts. Facilities have been provided for them so that they may have the choice of two fine 18-hole courses on which to play, both only a short ride from the hotels. The Mill River Country Club has been kind enough to extend the hospitality of the Club throughout the convention time with a nominal greens' fee of $1.00 per day. The Municipal golf course, a fine, new layout is also available to visitors at any time.

International Fellowship Club

The annual luncheon and election of officers of the International Fellowship Club will be held on Monday at noon, June 10th, in the Jungle Room. The present officers of the Club are:

President, **Thomas B. Haddow,** Newark, N. J.
Vice-president, **H. M. Cherry,** Detroit, Mich.
Secretary-treasurer, **T. A. Trumbour,** New York.

As noted above, under the entertainment features, the annual Open House will be held on Monday evening, June 10 in the Jungle Room of the Stratfield Hotel.

Exhibition

The outstanding new feature of this convention will be the exhibition of electroplating equipment and supplies, and electroplated products to be held at the Mosque Temple because it will be too large and elaborate a show to be housed in the hotel. It will be nation-wide in extent as space has been taken by manufacturers from all parts of the United States.

The Exhibition will open on Monday, June 10th at 1 p. m. and will be open every day from 1 p. m. to 10 p. m., except the last day, Friday, June 14th, when it will be open from 10 a. m. to 10 p. m. It will include the last word in materials, equipment and accessories, manufactured and sold throughout the country. All the available space has been contracted for by the leading firms serving the electroplating and metal coating and finishing industries. Many of the exhibits will be "alive," showing the operations as they are actually carried on in the plant. A visit to this exhibition will be an education in itself.

Metal Industry Cup for Best Plated Work

Another new feature will be a contest between Branches of the American Electro-Platers' Society, for a silver cup presented by **Metal Industry,** for the best exhibit of plated and finished work. This cup will be retained by the Branch which wins it, for one year. When it has been won by any one Branch for three successive years, it will become the permanent property of that Branch, and a new cup will be provided. It is expected that there will be intense rivalry between the different Branches of the Society, for the honor of being the first to have their name engraved on the Cup. George Hogaboom offers to bet one dollar ($1) on the East at this Convention!

"How It Is Done"

The slogan for this convention is aptly enough, "How It Is Done." We say aptly because it is fitting that this slogan should be used for a convention of electroplaters, and for a convention of electroplaters holding its meetings in New England in such an important center as Bridgeport. The papers read at the technical sessions will tell "How It Is Done"; the exhibits will show "How It is Done"; the attendants at the convention will learn "How It Is Done."

THOMAS B. HADDOW
President, I. F. C.

H. M. CHERRY
Vice-President, I. F. C.

T. A. TRUMBOUR
Secretary-Treasurer, I. F. C.

Program

The complete technical program of the convention, listing day-by-day activities, the papers to be presented, etc. is given below.

Monday A. M., June 10, 1935

8:30—Registration Hotel Stratfield

9:00—Welcoming of delegates, members and visitors
Ray O'Connor, Chairman, General Committee
Joseph Sexton, President, Bridgeport Branch

Welcome to Bridgeport
Mayor of Bridgeport

Opening Session
Charles H. Proctor, presiding
Founder of A. E. S., 1909

Presidential Address—"The A. E. S."
H. A. Gilbertson

Business Session
Presentation of Credentials
Submission of amendents to constitution

1:30 P. M.—Educational Session—Mosque Temple
William Phillips, presiding
Chairman, Research Committee

1. The Manufacturer and the Plater
   A. P. Munning, Hanson Van Winkle Munning Company
2. Report of Research Work
   Dr. William Blum, U. S. Bureau of Standards
   Paul V. Strausser, A.E.S. Research Associate
3. The Effect of Different Acids on Cold Rolled Steel
   E. T. Candee, Chief Chemist, American Metal Hose Company, Waterbury, Conn.
4. The Adhesion of Electrodeposits
   Walter R. Meyer, Research Chemist, General Electric Company, Bridgeport

Tuesday, June 11, 1935

9:00 A. M.—New England Session—Hotel Stratfield
Thomas H. Chamberlain, presiding

1. Black Nickel Plating
   Joseph Downes, Remington-Rand, Inc., Middletown, Conn.
2. Plating Antimonial Lead
   Clarence Hemle, Walter R. Meyer, General Electric Company, Bridgeport
3. Barrel Finishing, Plating and Burnishing
   William Delage, The Oakville Division, Scovill Manufacturing Company, Oakville, Conn.
4. Spotting Out of Plated Cast Iron
   Walter W. Rowe, North and Judd Company, New Britain, Conn.
5. Electroplating Zinc Base Die Castings
   Charles Costello, C. Cowles Company, New Haven, Conn.
6. Coloring of Metals
   Harry MacFadyen, Arrow-Hart-Hegeman Electric Company, Hartford, Conn.

Tuesday, June 11, 1935

7:45 P. M.—Dr. William Blum, presiding—Hotel Stratfield

1. The Mechanism of Electroplating
   Dr. Hiram Lukens, University of Pennsylvania, Philadelphia, Pa.
2. Spectrograph Analysis as Applied to Electroplating
   Dr. D. T. Ewing, Michigan State College, Lansing, Mich.
3. X-Ray Diffraction of Metals
   Dr. H. R. Isenburger, St. John X-Ray Laboratories, Long Island City, N. Y.
4. Measuring Thickness of Electrodeposits With a Microscope
   Dr. Carl Heussner, Technical Director, The Chrysler Corporation, Detroit

Wednesday, June 12, 1935

7:45 P. M.—President H. A. Gilbertson, presiding—Mosque Temple.

1. Air Conditioning of Plating, Buffing, and Lacquering Rooms
   A. W. Knecht, Consulting Engineer, Graybar Building, New York City
2. Brightening Up the Plating Room
   J. A. Coolahan, Hercules Powder Co., Wilmington, Delaware
3. Why Metals Corrode
   Dr. Robert A. Burns, Asst. Chief Chemist, Bell Telephone Laboratories, New York City
4. Methods for Prevention of Season Cracks of Brass in Electroplating
   B. J. McGar, Assistant Chief Metallurgist, The Chase Companies, Waterbury, Conn.

Thursday, June 13, 1935

9:00 A. M.—Thomas A. Slattery, Vice President, A. E. S., presiding—Hotel Stratfield

1. Electrodeposition of Tin
   E. A. Shields, Chief Metallurgist, Westinghouse Electric and Manufacturing Company, Springfield, Mass.
2. Optimum Metal Concentration of Nickel Solutions
   Dr. D. A. Cotton, Chief Research Engineer, Delco-Remy Corp., Anderson, Ind.
3. The Relative Value of Accelerated Corrosion & Outdoor Exposure Tests
   Dr. William Blum, Chemist, U. S. Bureau of Standards, Washington, D. C.
4. Adventures in Electroplating Copper from Ammoniacal Solutions
   Dr. E. A. Vuilleumier, Dickinson College, Carlisle, Pa.

Ladies' Program

As always at the conventions of the American Electro-Platers' Society, the ladies are more than welcome. They will not have a dull moment all week.

Monday Afternoon. A visit to a velvet and lace manufacturing plant.

Monday Evening. Open House celebration of the International Fellowship Club.

Tuesday Morning. Open.

Tuesday Afternoon. Shore dinner at the Seven Gables Inn, and games.

Tuesday Evening. Theatre.

Wednesday. Bus ride to New Haven through Yale University; lunch at The Oasis, and a ride through Naugatuck Valley.

Wednesday Evening. Card games at the Stratfield Hotel.

Thursday Morning. Sightseeing.

Thursday Afternoon. Lunch and fashion show at Read's.

Thursday Evening. Banquet at the Stratfield Hotel.

Exhibitors and Their Products

Apothecaries Hall Company, Waterbury, Conn. Anodes; electroplating supplies.

Bausch and Lomb Optical Company, Rochester, N. Y. Electroplater's microscope, FSM metallurgical microscope and routine metallographic equipment with microscope and camera for measuring deposits; wide field binocular microscopes for surface inspection; magnifiers and readers; wide field tubes, and the new Bausch and Lomb shop microscope.

Belke Manufacturing Company, 947 N. Cicero Avenue, Chicago, Ill. A wide variety of electroplating equipment and supplies including rheostats, tank lining, filters, racks, etc.

Bias Buff and Wheel Company, Inc., 430 Communipaw Avenue, Jersey City, N. J. Buffing and polishing wheels.

G. S. Blakeslee and Company, 19th Street and 52nd Avenue, Chicago, Ill. Degreasing machines to remove dirt, chips, grease, etc. from stamped and machined parts prior to plating, enameling, inspection, etc.

Bullard Company Bridgeport, Conn. Bullard-Dunn Descaling Process.

Carborundum Company, Niagara Falls, N. Y. Various types of polishing grains, powders and finishing compounds; special cutlery grinding and polishing wheels.

Chandeysson Electric Company, St. Louis, Mo. Electroplating generators, instrument panels, etc.

Chromium Process Company, Derby, Conn. Electroplated products.

Contract Plating Company, Bridgeport, Conn. Electroplated work of all types, still and barrel plated, in a variety of finishes.

E. I. du Pont de Nemours & Company, Inc., R & H Chemicals Department, Wilmington, Dela. Representative articles which have been plated with zinc, brass, bronze, copper, silver and gold by the use of R & H chemicals. Representatives present will include **F. F. Oplinger, W. Schneider,** and **J. C. Pickard.**

Egyptian Lacquer Manufacturing Company, 90 West Street, New York. Samples of finished work showing the latest lacquer and enamel finishes on various types of metals.

J. B. Ford Company, Wyandotte, Mich. A complete display of Wyandotte specialized metal cleaners for plating, lacquering, enameling, japanning and vitreous enameling in still solutions, electric cleaning solutions, metal parts washing machines, tumbling barrels, spray gun equipment, etc.; also cleaning before bonderizing, anodizing, hot tinning, galvanizing and assembling for removing lacquer, japan, carbonized mineral oils and fabricating compounds; burnishing compounds and neutralizers for neutralizing acid after pickling operations.

General Electric Company, Schenectady, N. Y. A variety of products illustrating the effects that can be achieved with electroplated as well as oxidized, lacquer and enamel finishes.

Grasselli Chemical Company, Inc., Cleveland, Ohio. A small plating tank in operation, plating a variety of small metal parts by the Cadalyte process; cadmium anodes in various stages of use; a number of finished metal parts supplied by manufacturers using the Cadalyte process. Representatives are **R. H. McCahan** and **R. O. Hull.**

Hammond Machinery Builders, Inc., Kalamazoo, Mich. Polishing lathes of three types: Type RV; Type C and Type RR Rite-speed.

Hanson-Van Winkle-Munning Company, Matawan, N. J. The exhibit will be based on the 16 important achievements recently made in the electroplating field, including: Zam anodes; filter bags for nickel anodes; buffing compositions for nickel, brass and chromium; generator brushes; tank rheostats; special buffs. Manufactured articles showing the following finishes: bright nickel; Loxal; Electrolytic Bright Dip; No. 20 galvanizing flux; tinning flux; the Cadux process of cadmium plating. Photographs will illustrate full and semi-automatic conveyors; a new burnishing barrel; a new centrifugal metal dryer and a continuous current low voltage motor-driven generator set.

International Fellowship Club. An association of the salesmen of electroplating and metal finishing equipment and supplies.

Iron Age, 239 W. 39th Street, New York City. A weekly business journal specializing in iron and steel.

Lasalco, Inc., 2822 La Salle Street, St. Louis, Mo. No. 4 Richards barrel platers; No. 2 Lasalco burnishers; utility barrel platers.

Lea Manufacturing Company, 16 Cherry Avenue, Waterbury, Conn. Metal products finished by the Lea method of metal finishing. These products will include an assortment of articles ranging from Sterling silver vases to automobile parts.

Maas and Waldstein Company, 438 Riverside Avenue, Newark, N. J. A variety of finished products which have been coated with their various lacquers and lacquer enamels.

MacDermid, Inc., Waterbury, Conn. Metex metal cleaner in various grades and also standard chemicals for electroplaters; Tartex to supplant pure cream of tartar in many instances; brushes for metal finishing.

Magnus Chemical Company, Garwood, N. J. Metal cleaners in a variety of types for all purposes.

Matchless Metal Polish Company, Glen Ridge, N. J. Buffing compositions; buffs for brass, copper, nickel, chromium, stainless steel or silver.

MacFarland Manufacturing Company, Inc., 21-03 41st Avenue, L. I. City, N. Y. Buffing wheels.

MacCathron Boiler Works Company, 72 Knowlton Street, Bridgeport, Conn. Tanks of all descriptions, steam heated, water-cooled, plain or lead-lined.

Master Electroplaters' Institute, 8735 E. Jefferson Avenue, Detroit, Mich. A trade association of the job electroplating industry throughout the United States.

Metal Industry, 116 John Street, New York City. A monthly journal relating to the electroplating, metal finishing and metal manufacturing industries. **Platers' Guide** (with which is combined Brass World). A monthly publication devoted to metal cleaning, plating, polishing and finishing. **Platers' Guidebook:** 1935 Solution Edition. A booklet of technical information for the practical man in charge of metal finishing.

N. H. Nilson Machine Company, Bridgeport, Conn. Special electroplating equipment installations.

Norton Company, Worcester, Mass. Abrasives, abrasive wheels, etc.

New Haven Clock Company, New Haven, Conn. Electroplated and finished metal products.

Oakite Products, Inc., 22 Thames Street, New York, N. Y. Samples of plated work; a practical working demonstration of Oakite Saturol for cleaning cold rolled steels and other metals in which carbon smuts and insoluble dirts are encountered. Representatives: **H. C. Duggan, C. E. Barber, L. E. Miller, F. W. Reese, F. E. Allen, P. M. Cunningham** and **A. A. Kopp.**

Pittsburgh Plate Glass Company, 4 Chester Avenue, Newark, N. J. Lacquers.

Puritan Manufacturing Company, Waterbury, Conn. Electroplating supplies.

Pyrene Manufacturing Company, 560 Belmont Avenue, Newark, N. J. Bright nickel process showing samples of the work and schematic procedure; also diagrams illustrating the difference between the standard methods and the Pyrene process.

N. Ransohoff, Inc., W. 71st Street at Millcreek, Carthage, Cincinnati, Ohio. Ideal tilting, ball separating burnishing barrel in actual operation with a glass door so that the operation of the barrel can be studied.

Raybestos-Manhattan, Inc., Passaic, N. J. Plating Tank linings.

Rex Products and Manufacturing Company, Detroit, Mich. Metal parts washing and cleaning equipment.

Schwartz Brothers, Matawan, N. J.

Seymour Manufacturing Company, Seymour, Conn. Anodes of all types.

Stanley Chemical Company, East Berlin, Conn. Metal cleaners.

Frederic B. Stevens, Inc., Larned and Third Streets, Detroit, Mich. Electroplating equipment and supplies of all types.

Tuttle Chemical Company, 245 7th Avenue, New York. Zialite process of nickel plating.

Udylite Company, 1651 E. Grand Boulevard, Detroit, Mich. Samples of parts cadmium plated by the Udylite process; a representative line of electroplating equipment including anodes, plating barrels, rheostats, buffs, generators, etc. Representatives: **L. K. Lindahl, E. F. Berry, W. L. Cassell, A. B. Hoefer** and **H. W. Faint.**

Williamsville Buff Manufacturing Company, Danielson, Conn. Buffing and polishing wheels.

Yankee Products Company, Bridgeport, Conn. Electroplating supplies.

Zapon Company, Stamford, Conn. Articles finished by use of Zapon lacquers and enamels. The exhibit will include pieces finished by Chase Company, Noera Manufacturing Company, International Silver Company and other Connecticut concerns.

It is very earnestly requested by the management of the convention and the exhibition that members and guests refrain from entertainment in any form in their rooms during the business session hours and that there be no exhibits of any kind in hotel rooms.

Bronze Stains

Q.—Among the several articles we manufacture is a small bronze inscription to be used on the wash of monuments and one of our customers has complained that these plates stain the monument.

We are wondering if you could offer some suggestion which might overcome this condition and if so write us as soon as convenient.

These small bronze markers which are approximately 3¼ x 6½" are made with two lugs approximately 1½" long by ¼" diameter and cast on the reverse side of the plate. The wash of a monument is drilled to accommodate these lugs which holes are filled with a good grade of cement, lugs being pushed down into the cement before it has hardened.

A.—Probably the most permanent method of avoiding staining of the monument is to gold plate the bronze markers. This would not be so expensive as to be impracticable, but would of course result in a permanent bright gold color rather than the natural bronze color. Such a plate properly applied should be good for many years. A more temporary solution would be to use a moisture resisting lacquer, of the phthallic anhydride type, which can be obtained from any manufacturer of synthetic lacquers and varnishes. Such a lacquer properly baked on would not affect the color of the bronze and would offer protection for a period of perhaps two to four years, depending upon the severity of the condition. Failure would finally occur and the staining would then be as noticeable as if no lacquer had been used.

In making bronze castings for this type of service, it is very important that the metal should be as free as possible from impurities, particularly such substances as sulphur and iron. There is also some advantage in using a straight copper-tin bronze containing no zinc. It is possible that a good grade of aluminum bronze would show considerably better results than the copper-tin bronze, although the former would have a gold color rather than the characteristic bronze color.—**Metallurgist.**

Master Electro-Platers' Institute

THE Second Annual Meeting of the Master Electro-Platers' Institute of the United States will be held in Bridgeport, Conn., June 8-9 with headquarters at the Stratfield Hotel. It will signalize the beginning of the third year of energetic effort in creating permanent and enduring co-operation within the job electroplating industry.

Those who have been actively engaged in this movement will recall the early efforts in 1933 to set up a national organization with the idea of fostering co-operation in competition. The results of these efforts are shown by the fact that the Institute has added over 150 members in each year of its existence. It now embraces practically all of the local associations from coast to coast and it has members in almost every state in the Union. It is continuing to build on its foundation and to develop and perfect a permanent co-operation system in electroplating competition.

The chief purpose of every annual meeting is to enable electroplaters to know each other better, to exchange experiences and views and consequently to have a better understanding of the problems which confront the industry as a whole, and the electroplater individually. By discussion, followed by trial and error efforts, the industry is gradually working out the different solutions to its problems.

The annual meeting will be officially opened at 9 A. M., Saturday, June 8th. The meetings will close with the Second Annual Banquet, scheduled for 6:30 P. M., Sunday, June 9th. An $8.00 registration fee will entitle a firm to one registrant and will cover all meetings and regularly scheduled events, including luncheon Saturday, June 8th, entertainment and buffet refreshments, Saturday, June 8th, breakfast Sunday morning, June 9th, entertainment Sunday afternoon, banquet Sunday night and the administrative costs of the meeting.

Those who travel short distances and who are unable to stay over to attend the American Electro-Platers' Society sessions can obtain reduced rate week-end tickets. All others are urged to apply for reduced fare **certificates,** which will be validated at the convention headquarters and entitle the user to a reduced return trip rate.

Job platers who are as yet non-members of the Institute are urged to attend the meeting. They will be given full opportunity to participate in all discussions among which will be the following: Planning and Progress Committee Programs of the Supplementary Code Authority; Minimum Wages in the Upper Brackets of Labor; Institute Budget for 1935 and 1936; Election of Officers.

The Institute has been fortunate in obtaining the services of A. P. Munning of the Hanson-Van Winkle-Munning Company, to speak on the topic "Fostering Co-Operation Through Trade Association Activity." Additional speakers are being arranged for.

Present Officers

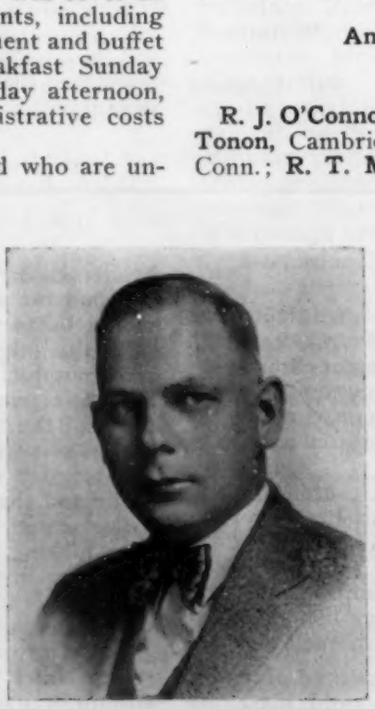
JAMES GERITY, JR., **President**
PHILIP SIEVERING, JR., Vice-President
H. E. COOMBES, Vice-President
LEO D. JENSEN, Vice-President
E. W. CARR, Vice-President
R. J. NAGLE, Sec'y-Treasurer
E. J. MUSICK, Councilor
HUGH BOOTH, Executive Secretary
CHARLES R. LE CLAIRE, Ass't. Sec'y.

Annual Meeting Committee

Arrangements

R. J. O'Connor, Chairman, Bridgeport, Conn.; H. R. **Tonon,** Cambridge, Mass.; **H. B. Wilson,** Plainville, Conn.; **R. T. Marshall,** Worcester, Mass.; **A. Breg-**

JAMES GERITY, JR.
President, M. E. P. I.



LEO D. JENSEN
Vice-President, M. E. P. I.

PHILIP SIEVERING, JR.
Vice-President, M. E. P. I.

R. J. NAGLE
Secretary-Treasurer, M. E. P. I.

E. J. MUSICK
Counsellor, M. E. P. I.

man, New York, N. Y.; **P. Sievering, Jr.,** New York, N. Y.; **G. A. Barrow,** Jackson, Mich.; **J. Esposito,** Oakland, Calif.; **F. J. Hanlon,** Chicago, Ill.; **S. Nowak,** Buffalo, N. Y.; **C. T. Kinsman,** Binghamton, N. Y.; **F. F. Pierdon,** Washington, D. C.; **Robert Steuernagle,** Milwaukee, Wis.

Entertainment

R. E. Cleveland, Waterbury, Conn., Chairman; **N. Tice,** Shelton, Conn.; **F. F. Shane,** Hartford, Conn.; **J. Handley,** Meriden, Conn.; **T. J. Murphy,** Springfield, Mass.; **B. Josephs,** Worcester, Mass.; **C. F. Campbell,** Boston, Mass.

Repairing Aluminum

Q.—I wish to get information on soldering and repairing aluminum ware, such as cooking pots, etc.

A.—Aluminum is repaired and fabricated in two principal ways—by soldering and by welding the latter being the standard method. Both processes require skill and special materials and requirements. Naturally the soldering process was attempted first, but when they tackled the job on aluminum, they struck a new line of troubles that constantly produced mysterious failures. It was not until the metallurgy of the problem was solved that the soldering of aluminum became anything worth while. This general introduction has been given for the purpose of cautioning the beginner.

It is now known that aluminum is more difficult to solder than are other metals, and for the following reasons: the oxide film forms very rapidly, and it is more difficult to remove than from any other metal. As this film must be removed before the solder will adhere, there is seldom any real union with the solder. Any attempt to remove the oxide by acids, alkalis or a combination of fluxes, which is so common with other metals, is likely to injure the metal. Any exposure of the cleaned surface to the air causes a new film to develop instantly. Therefore scraping or filing does not solve the problem. The most practical way is to flow molten solder over the surface, and then do the scraping through and under the solder, thus avoiding exposure to the air. This method invites a new trouble from the floating of the film into the solder, which tends to make a porous or dirty joint. Furthermore, the solder and the aluminum form an electrolytic combination, and any moisture will start destruction of the joint.

Aluminum melts at the rather low temperature of about 1215 degrees F., and thin sheet metal is likely to be melted or damaged unless a special soft solder is used. On the other hand, the oxide requires over four times this heat to melt. Another point to remember is that aluminum is very weak at moderately high temperatures. Joints subjected to moisture should be painted. Care must be taken not to overheat the metal, solder and flux. Surfaces to be soldered must be made free from grease, dirt and paint, which can be done fairly well by scraping and by washing with gasoline. Apply a 20 per cent solution of hydrofluoric acid to the joining surfaces. If the shape of the work permits, it may be dipped into the acid. The acid treatment gives a white or frosted appearance, which should be washed with clean water. Heat a short length of the joint with a blow torch or soldering iron, as its size may require, and melt on a coating of flux. Increase the heat to melt the solder when rubbed on, being careful not to fire the flux or burn the metal. Hold the parts together under pressure, and let the solder cool as quickly as possible. The solders—hard and soft—and the fluxes and acid should be bought from the producers of aluminum or reliable dealers. Sheet aluminum takes soft solder, and castings require hard solder.

As most aluminum ware contains some alloy, such as zinc, tin, copper, magnesium, and other materials, variations in the materials for solder and fluxes must be considered. The U. S. Bureau of Standards suggests the following: Use paraffin for a flux. Make a high temperature solder of 12 per cent aluminum, 12 per cent zinc, and 76 per cent. tin. A low temperature, or soft solder may be aluminum 5 per cent, zinc 8 per cent, and tin 87 per cent.—**Mechanical Engineer.**

Early Silver Plating in America

By WILLIAM G. SNOW
International Silver Company, Meriden, Conn.

How a Great Industry Grew From a Small Beginning

THERE has always been some uncertainty as to just how the process of electro-silver plating was started in this country. Recently, however, additional information bearing on this subject has been located.

It is a matter of record that Elkington & Company of Birmingham, England, secured a patent for electro-silver plating in 1840. In a general way we have also known that this process was being used in the latter part of the 40's in this country and by 1847 the experimenting had reached a stage where Rogers Brothers of Hartford began to produce spoons and forks on a commercial basis.

Prior to that, not alone Rogers Brothers, but several others were experimenting. Among them were James H. Isaacson, William H. Pratt, Asa and William Rogers, all of Hartford and possibly others. It has always been difficult to decide whether these Hartford experimenters had in any way the benefit of the Elkington process described as "an improvement in coating or plating certain metals by galvanic current." It now seems as if the Hartford delvers into this new process had some of this information and this feeling is encouraged by the fact that in the Hartford Times in November, 1842, appears this notice signed by Sumner Smith:

Galvanism

The subscriber would respectfully announce to the public that he has discovered the art of Gilding, Silvering, etc. by Galvanism; all orders left at the store of Horace Goodwin, 2d, 166 Main Street, will be promptly attended to. The superiority of this process consists in the fact, that any quantity of gold or silver can be put on to all kinds of metals, and will stand the test of acids or alkalies; the superiority of the articles thus covered will be seen at a glance.

N. B. Any person wishing information in this beautiful Art, can obtain it of the subscriber for a moderate compensation.

Nov. 1, 1842. **Sumner Smith.**

Sumner Smith, born in Brighton, Mass. in 1811, had come to Hartford in the thirties and in 1840 was working for Horace Goodwin, jeweler, as a horologist. He eventually married Horace Goodwin's daughter. In his announcement he offered to anyone willing to pay "a modest compensation" what he knew about "galvanism" which he stated was "the art of Gilding, Silvering," etc. Sumner Smith was more or less active for several years and shortly after he published this advertisement Wm. H. Pratt in 1843 and Horace Goodwin (Smith's father-in-law) in 1844 advertised that they were doing silver plating.

At this time, working with Pratt as a partner was James H. Isaacson under the name of Wm. H. Pratt & Company who in 1841 had been in business in East Hartford making coin silver spoons under the firm name of Isaacson, Allen & Company and this same Isaacson together with Asa Rogers are located in 1843 as being in Granby, Connecticut, connected with William B. Cowles & Company who had for some time been making German silver spoons.

Sumner Smith (who in 1846 was in the Directory as a U. S. Patent Agent) died in 1847 and it was found when his estate was filed that there was an item indicating that he owed the Franklin Institute in Philadelphia $10.00. The Franklin Institute which was organized about thirty years earlier had been increasing its services to its members as the years passed and for over twenty-five years they had published what was called the "Journal of the Franklin Institute and Mechanics' Register" in which articles taken from English and other foreign publications touching on subjects in which their members would be interested as well as information of a more general character as to what was happening in the United States.

In 1841 and in issues of the "Journal" in the years immediately following they published a number of articles about the Elkington inventions—and there were several. Inasmuch as Sumner Smith owed the Institute $10.00 when he died, without doubt he had been in close personal touch with what the Institute was doing and had probably received the "Journal" as issued. It is therefore a reasonable conclusion that his advertisement in which he offered to sell information regarding "galvanism" was inspired by information that he secured from the Franklin Institute "Journal" which he was probably receiving.

While it has already been shown that a number of people were evidently experimenting with this new process, likely on the information that Sumner Smith furnished, none of them seemed to have gone very far beyond the laboratory or "job" stage, not realizing the commercial possibilities of the new art except in the case of the Rogers brothers, William and Asa, and Isaacson. They had vision and imagination.

We have already referred to Asa Rogers and Isaacson going to Granby. Whitfield Cowles of Granby graduated from Yale College and in 1794 he was ordained as pastor in Granby in the Turkey Hills district. In 1800 he built for himself a large residence on land which he owned. He continued as a pastor until 1808 when some dissatisfaction arose between the Rev. Cowles and his parishioners and he resigned. About that time or possibly earlier he had added to

his regular duties as minister and farmer and became a manufacturer in a small way, making wire and wire products, including cards for carding wool and other fabrics. He had been a peppermint distiller for many years and was credited with making the first cotton cloth in that vicinity. As early as 1812 Cowles was running a wire company buying the rods from Charles Sigourney & Company, Hartford, which were drawn down to the small wire wanted. A few years later Charles W. Mills made a contract to work with him and later still G. Arthur Griswold worked with Cowles and they were operating as Cowles, Griswold & Mills. Mills left to make cards in Hartford and the firm name was changed to Cowles & Griswold. Later Griswold left and about 1832 Cowles took in his sons under the name of Whitfield Cowles & Sons. At the time his sons came with him or shortly afterward they had a shop on the banks of the Farmington River just below what is now known as the "Spoonville" bridge and they were undoubtedly on the lookout for anything else that they could produce at their shop.

Whitfield Cowles died in 1840 and one (or more) of his sons continued the business under the name of Wm. B. Cowles & Company. Some time later, just when cannot yet be determined, they added to their activities the making of German silver spoons, probably in the late 30's or early 40's, and just before the time that Asa Rogers and James H. Isaacson are recorded as being actively connected with the Cowles industry in Granby. While they were making German silver spoons no silver plating was done before Rogers and Isaacson joined Cowles in 1843.

Evidently Rogers and Isaacson had gone far enough with their experiments in Hartford to realize that the great field for the use of this new process was in making silver plated spoons and forks, and that it would be of considerable advantage to handle this new business in connection with a maker of the German silver blanks. Records indicate by books and papers recently located in the old Cowles mansion that they really did manufacture and market silver plated spoons and forks at that time and in 1844 their business had been far enough perfected so that a larger production and a better plan of organization to manufacture was desirable.

They continued to expand their business and that they were selling goods in considerable quantities direct to hotels and steamboats, as well as to dealers for family use, is shown by letters in evidence written in 1847 by William B. Cowles when out selling the line after Rogers and Isaacson had left. He wrote the factory and stated he had an order from the Geneva Hotel in Rochester for spoons, "likely because Mr. Seeley the proprietor had used the Cowles goods on his table for three years which gives him confidence in our work." He also secured an order on the Lake steamboat "Nile" from Buffalo because they had been using Cowles spoons on their tables for three years. These indirect testimonials indicate that Cowles was putting out, under the supervision of Rogers and Isaacson, silverplated spoons in 1844.

By 1845 their ideas as to the proper organization had crystallized to a point where William B. Cowles of Granby, John D. Johnson of Waterbury, James H. Isaacson of Hartford and Asa Rogers of Hartford, organized the Cowles Manufacturing Company and were legally incorporated under the laws of the State "for the purpose of manufacturing German and silver plated spoons, forks, butter knives, or any other articles in the same line made from German silver and other metals." Asa Rogers was secretary of the company. That they made considerable quantities of this product is shown by some of the books of the Cowles Manufacturing Company still in existence and although the general public were not yet exactly "sold" on the new idea they were making progress.

During this time William Rogers with his brother Simeon was maintaining a jewelry and silversmith's shop in Hartford at 4 State Street, William having left his partner Joseph Church (Church & Rogers) in 1836. Prior to that date William, as well as Asa, had been making spoons of coin silver starting about 1825, and early in 1846 William Rogers was advertising that he was selling the silver-plated spoons made by Cowles Manufacturing Company. The New York Commercial at that time published a four-inch write-up headed "Silver and Not Silver," regarding the wonderful electro-silver plated spoons the Cowles Manufacturing Company was producing.

Up to this time, while it will be seen that William

TROPHY ROOM

Sales Service Institute of the International Silver Company, Meriden, Conn.

as well as Asa and Isaacson were evidently responsible for the production of quite a quantity of spoons and forks under the Cowles name, nothing had appeared with the Rogers mark.

In the Fall of 1846 the Rogers' and Isaacson evidently were satisfied that their plans for manufacturing these goods were far enough perfected so that they could safely put out this merchandise in a large volume carrying the Rogers name. As William and Asa had been making coin silver stamped with their name for many years and undoubtedly had built up a valuable reputation as makers of quality products, they did not in any way wish to injure their reputation by sponsoring silver plate until they were sure the product was a good one.

In the Fall of 1846 the Cowles Manufacturing Company, as far as the Rogers' and Isaacson were concerned, disbanded, the Rogers devoting their entire time to the Hartford business, using their State Street basement for silver plating and Isaacson going to New York where he had a job plating establishment on Center Street for over thirty years. He was born in Haverhill, Mass., in 1812 of Native parents, and died in 1881 in Elizabeth, New Jersey, where he was working for the Singer Manufacturing Company.

The Cowles Manufacturing Company, due to financial difficulty, had only indifferent success from that time and finally discontinued the spoon business. The locality to this day is known as "Spoonville" although located in the town of East Granby.

Most of us know the career of the Rogers brothers —William, Asa, and Simeon, whose ancestor James Rogers had settled in New London in 1635. As already stated, from the basement at 4 State Street they worked producing their Rogers Brothers silverplate. By the summer of 1848 more room was necessary and they moved their plating shop to what was then called the "old jail" building in Hartford, corner Trumbull and Pearl Streets. The Hartford Courant of December 12, 1848, had a long article, the result of a visit of "A Man About Town" to the Rogers brothers work shop on the third floor of the "old jail" building. He relates what he saw and he describes the "Art of Silver Plate."

Further expansion was found necessary and in 1853 a four-story brick building was erected especially for their needs in producing both flat and hollowware in silverplate. At this time the Rogers Brothers Manufacturing Company had taken over the old Rogers Brothers business which was consummated in August. This new building was at the corner of Trumbull and Hicks Streets and later was used by the Jewel Belting Company and was demolished only about ten years ago, just prior to the Telephone Building being erected.

Not alone did the three Rogers brothers, William, Asa and Simeon (Simeon long a partner in William Rogers & Co.) take part in the organizing of the Rogers Brothers in 1847 but they were also interested in the formation of several other concerns in which their experiments and activities played a large part. There was Rogers & Brother, organized in Waterbury in 1858; Rogers, Smith & Company, organized in 1856 and William Rogers Manufacturing Company, organized in 1865 in Hartford. All of these concerns in which the Rogers were interested and which were early producers of silver plate are now a part of the International Silver Company and are producing the following trademarked lines: "1847 Rogers Bros." "(Star) Rogers & Bro.," "Wm. Rogers Mfg. Co.," "Wm. Rogers & Son," "(Anchor) Rogers (Anchor)," "(Eagle) Wm. Rogers (Star)," and others. All three brothers, when they died in the seventies, were connected with the Meriden Britannia Company, giving expert supervision to the 1847 Rogers Bros. line of silverplated spoons, forks, etc.

The Cowles works in 1843-1846 in Spoonville (Granby) were a veritable nursery or training school for workers in the new process of silver plating as well as the making of German silver blanks for plating. Scores of men who had previously had some experience in the making of coin silver spoons as well as many young men from the farm were employed there. After the Cowles business began to shrink, probably to some extent the result of the leaving of the Rogers brothers and Isaacson, some of the employees who had previously worked in Hartford and others who were learning in Granby drifted to that

REPRODUCTIONS OF OLD SILVERWARE

Sales Service Institute of the International Silver Company, Meriden, Conn.

important center—Hartford. Many of them immediately worked with the Rogers Brothers on State Street; some made other connections.

There were the Sperry brothers, Egbert W., Albert A., and Wm. W. Sperry and Alfred W. (a son of Egbert W.) who were associated off and on with the Rogers, later lending their experience picked up in Granby or Hartford to other spoon makers either as employees or partners. Practically all of the concerns that they were associated with after leaving Rogers in Hartford are now a part of the International Silver Company.

There was O. D. Mead working for Cowles while Rogers and Isaacson were there—1845-1846—then going to Hartford in 1847 working with them at the State Street basement for a year or two, then running a plating shop of his own for a short time, finally going to Philadelphia, where he was in business for about twenty-five years.

The Foxes, Andrew W. and Horace, before and after their Granby association, were silversmiths in Hartford. In 1846, Marshall Forbes, then about sixteen years old, was learning how to plate and burnish silverware in Granby. A few years later he left, going to Wallingford where he worked for Samuel Simpson for a time in the same line. By 1854 he was located in Meriden working in the plating room of the Meriden Britannia Company. A short time later he was in charge of that important part of the company's work at one hundred dollars a month, and he continued as a superintendent of the plating rooms until he died.

There were many others who had their first instructions how to plate under the supervision of Asa Rogers and Isaacson; the list is too long to include in this record. The Cowles plant in Granby was undoubtedly the first place where the experimenting that had been going on in Hartford was put to practical work and enabled the producer to supply spoons and forks in a standard, uniform way.

While this activity and interest was shown by Hartford residents in early silver plating, the Meriden Britannia Company, which was organized in Meriden, December, 1852, to manufacture britannia and pewter goods, also included in their line very shortly, plated ware, especially spoons and forks. At the start there was a man by the name of J. H. Martin in Wallingford who did plating for the Meriden Britannia Company who probably got his knowledge of the new art from the Hartford crowd.

By the middle of 1853 the Meriden Britannia Company began doing their own plating and their first shop to do this work was located on Hanover Street on the north side, just west of the corner of South Colony Street. Not alone the Meriden Britannia Company but also Rogers Brothers in Hartford in those days, used silver coin in lieu of anodes. This came about naturally as it was the practice of the silversmiths in those days in making spoons or forks or other pieces, to use silver coin as a basis. This coin they either picked up in circulation or bought from the banks, often paying a premium.

By the latter part of 1853 the Meriden Britannia Company had arrived at the decision that the use of coin which was only .900 fine was not as economical as to buy pure silver which they then began to purchase from Platt & Brother (Handy & Harman successor), 4 Liberty Place, New York, at $1.50 an ounce. Many of the smaller platers, however, continued the use of coin for a considerable period. In fact as late as the 70's it is known that "coin" was being used for that purpose in some of the smaller factories.

In further reference to the Elkington patents it can be stated that G. R. Elkington of Birmingham, England, was also inventor and patentee for electro-deposition of silver in 1838 and that he had secured a patent "for a gilding process by emersion" in 1836. In 1840, he with his cousin, under the name of G. R. & Henry Elkington, received a patent for a more complete process. Originally the Messrs. Elkington, not being manufacturers themselves, planned to permit the use of their process to the trade and grant licenses for their privileges to contemplated manufacturers. They were so unsuccessful, however, in selling this permit that they decided to go into the manufacturing of electro plated goods themselves. This idea of licensing manufacturers to operate under their patents was tried out not only abroad with indifferent success but one of the Elkingtons is reported to have come to this country in the early forties to see if some possible user could be interested. There is no record that the Elkingtons secured a patent in the United States and there is nothing to show they made any progress toward issing a permit to any manufacturer here.

Around thirty-five years ago in New York the writer ran across a man by the name of Elkington from Birmingham, England, who stated that he was a nephew of the Elkington who originated silver plate. His uncle, so he said, was unable to make any satisfactory arrangement with any American manufacturer to use his process. This was approximately 1841. Shortly after this visit here silverplating with a galvanic battery began to be talked about and a year or two later, as we know, goods of this description were turned out in Granby or Hartford.

In taking this up with Elkington & Company of Birmingham who are still in business, they recently stated that one of the family, Gerard B. Elkington, came to New York about thirty or thirty-five years ago in the interest of a steel concern with which he was connected and he was probably the person referred to as being in New York around 1900, who described himself as a nephew of Elkington, the patentee.

It will be seen, therefore, that it is unlikely that there was any direct connection between the Elkington experiments in England with what was going on later in Hartford except through the Franklin Institute Journal which gave a description of the Elkington process and might have been used as a basis by the Hartford men.

It would seem to indicate that the predecessors of the International Silver Company were among the earliest producers of commercial silver plate and that they should be given credit for its early development in this country.

Silver; Gold

Q.—Can you give me a formula to make a stop-off for plating silver?

My gold solution plates slowly. What would you advise for a good conductor to make it plate faster?

A.—For a stop-off for silver plating use equal parts of white damar varnish and asphaltum varnish, thinned with turpentine. Let dry thoroughly before plating.

As a conductor for your gold solution add 1 or 2 ozs. of sodium phosphate to each gallon of solution.

Plating Chemist.

Reminiscences of a Plater's Kid

By RALPH W. TILLOTSON
Electro Plater, Erie, Pa.

Part 2. Headaches and Experiences of Later Days*

TO THE writer, it seems that an ocean of water has flown over the millwheel since "kid days" at his uncle's old plating shop in the early nineteen hundreds. Viewed in dead reckoning of time the distance traversed from then until now is insignificant. Reckoned in technical advances as applying to the electroplating industry, we have come a long way from "how it was done in them days." What with mass methods, analytical control, automatic polishing, buffing and plating, the "old timer" of fifty years ago would no longer recognize as such, "the art of electroplating," or the "galvanoplastic manipulations" of the early seventies.

In spite of all the science and advancement, there are still rule 'o thumb and guess work outfits aplenty; small shops where patch work, sponge plate, and slipshod methods prevail, inexperienced or poorly experienced platers and greenhorn polishers are used, costly in the long run to the producer. Platers who have shifted about, poking in odd corners, have seen enough evidence of this, and of how traditions still rule among some remaining old timers and their offspring.

Plating Bumpers

Something of this sort was the experience of the writer upon being called to an eastern Pennsylvania industrial city in the late 1926. The call came from the makers of a new specialty auto bumper. They had been foundering for two months in attempts to get into operation, and by now the manager was about ready to run up the surrender signal. Their production consisted of a heavy steel tube bumper with hollow malleable iron heads driven into each end, containing parts to furnish a low beam of light over roadway. The operations consisted of the usual polishing, copper plate, buff and nickel, or rather they were intended to be such. But in the confusion of things it was little else than a turning about in circles. "Finished" work was rejected, and it could not be otherwise. Then it was refinished again, rejected again, and finally a large part of it was fired on the scrap head hopelessly chopped and butchered out of shape by the force of "greenhorn polishers."

Upon the arrival of the writer it was in every sense a case of "save ship," with a board of directors that had interfered with the two previous platers. It seemed that each director had a pet theory of his own as to "how plating WAS done." What had made things worse was the entire absence of any other plating plants there, with exception of one small job plater whose opinions were never sought for anyway, thus isolating this plant from contact with other plating shops. The criss-cross of conflicting opinions about solutions and various operations given by directors and even outsiders, and the two previous platers who had fought hard but been snowed under by the host of meddling Thomases, had brought things to a standstill where directors were licked as well as manager.

Polishing Without Polishers

A look about the polishing room found some fifteen "polishers and buffers," not one of whom had ever seen a wheel in all his life. No blowers were yet set up, and accumulated on the floor about the lathes were a couple of barrels of Turkish roughing emery of which the men complained that "it didn't stick to the damned wheels." Inquiry uncovered the information that about everything that was done, was done wrong. The glue was kept at boiling temperature from morning to night. Scarcity of wheels and lack of knowledge in handling them caused men to use half dried setups with the Turkish flying off after the first few rubs. I was told that "sometimes we use our wheels three times a day." The board of directors were dead set against experienced polishers, claiming that local talent and inexperienced, could be "broke in" just as well.

After some argument the writer obtained the concession of placing one experienced polisher in the room as instructor and foreman, and after a time, with a good many hard-fought-for changes, was able to get some sort of discipline among the green men. Tricks, such as running wet wheels, setting up grease wheels without the usual clean-off operation, were stopped. Loose shaft hangers were tightened up, and the speed, about 300 r.p.m. too low was brought up. The blower was hastily set up and a line of hoods run to the lathes. Replacing the Turkish, fast cutting alundum was got in. The glue was watched for temperature and cleanliness. Interminable arguments took place about "how to run wheels." Balancing and correcting of kicking wheels was fought for, and after weeks of struggle some sort of order was obtained.

The first hour in the polishing room gave the writer a headache, literally. The room was black with iron dust, and wheels running so completely out of balance as to jar the atmosphere with the noise of their kicking, gave one the feeling of an electro-vibratory treatment of the spine. A buffer, uncomfortable with perspiration running into his eyes, approached me

*Part 1 was published in our February issue.

with the question as to "what the hell kind of copper plating this was." He was hurling all his force against heavy steel tubes, 4 ft. 4" long each, acid copper plated. The buff smeared and clogged over the plate, and every now and then caught fire, driving the man frantic. Running a hand over a truck load of the tubes, gave the feel of "sand paper." Someone had recommended an air agitator for the acid copper solution, and it had "agitated" plenty of dirt up from the bottom over the plating work.

Examination of work supposed as being "finished," found most of it pitted so as to resemble a bad case of smallpox. Other pieces were cut through exposing the copper plate or the bare steel and iron. Some of it was rough from dirty solution, and plenty of peels were in sight. But the polishing effects were the biggest scream of all. The malleable iron heads and other parts had all too often been chopped into, gouged out, corners rounded off and otherwise demolished. With others examined, the succeeding operations of fining and greasing had been half done or done not at all. Vicious cuts of 46 were in sight with a liberal sprinkling of 80. And poor, half-done fineing and greasing, slipshod and hit and miss, left a hodge-podge of effects like Hell's own stew. To complete the picture, there sat against the plating room wall, table before her, perched jauntily on a high stool, the "inspector." Here, between applications of the powder puff, "finished or polished" work was "inspected." How could an inexperienced girl inspect what was supposed to be finished work? Alas, the manager, who really was a fine gentleman, waived the question. It had been an idea of a director that, "we must have an inspector."

A Plating Installation by the Board of Directors

Before completing this story, will the reader please imagine a fishy odor? If so, let him be assured of the undependability of the olfactory organ. Fiction is a poor competitor with truth, and the narrative as set forth is gospel.

A look over the plating room set up, or "up-set," convinced me that is was all, "rear end to." How far this thing was "end to" did not reveal itself at once but became more apparent as days of struggle went on, during which an attempt to carry on some sort of production had to be made to fill urgent orders. A fine modern generator was set up, but the bus bars stood dejectedly all in a corner. Instead of the familiar bus line, some of the round copper bars had been run from the generator, bent into a hideous loop, butchered and twisted over into the nickel tank, a distance of a few feet, with another clumsy branch line tapped off it and into a close-by cyanide copper tank. Thus the full amperage of 1500 was thrown into these two tanks when not a third of it was needed. Luckily, rheostats were in place. A plan to carry out the plating operations in successive straight line production had been foreseen, and all tanks stood in line, set into a four foot deep cement pit. Tanks were all six ft. depth inside, so made to accommodate the bumper tube plating vertically. No electro-cleaner was yet set up. The tank so intended contained coil and hot cleaner. Plating thus far had been by boil, scrub and acid dip. An overhead track to carry racks of work, was partly up, but no one seemed to know just how to carry out the plan of moving racks of work from tank to tank by overhead conveyor. Nor were any racks yet thought of. There seemed to be a hundred different things to correct at one time, and always a new surprise popping up. Next the hot cleaning tank was a steel rinsing tank filled with dirty water, and no provision made for draining or overflow. Next followed the acid dip tank. This was of heavy cypress, six ft. inside depth, and was intended for lead lining. But there was no lead lining, and whoever was responsible for this piece of "damtomfoolery" I know not, but the acid and water mix had been poured straight into the tank of unprotected wood, with not even so much as a coat of tar paint. It is now leaking a foot a day, and when finally we had it pulled out of the pit, the acid soaked wood had eaten the bolts in two. After inserting new bolts, considerable time was spent before it could be made to hold solution.

The cyanide copper tank, I was assured, was hopeless as "the plate all came out blistered," so they put in an acid copper tank. And since the acid copper tank was also leaking, it was hell there also. Hell with the nickel, hell with the polishers, and hell generally all around. Going up to the end of the line to look at the acid copper tank, also built of heavy cypress, I was astounded to find it also had been filled with the acid copper solution and no lining in the tank whatever. Like the acid dip tank it had been built for lead line, but none had been put in, and because of impatience to get production going, the former plater had been ordered to "put the solution in anyway." Such tanks built for lead line are not built with the planking interlocking or dovetailed, they are cut straight with each piece resting flat against the other, and no amount of drawing down bolts could make it tight.

Stopping Leaks with Barrels of Pitch

While laughter was out of order in the face of such misguided sincerity, I now was about to discover the finest piece of humor yet. Of all the writer's experiences, nothing funnier, (or more asinine) can be recalled. Being assured that everything possible had been done to stop the leaking, it was even pointed out to me that they had used about 15 barrels of pitch, AND POURED IT ALL ABOUT AND UNDERNEATH THE TANK! This tank was not in the pit, account of lack of space, but had been dug in four feet under the cement floor and set on timbers. Now then, a six to eight inch space had been cut out all about the leaking tank, and underneath leaving only the two timbers on which it rested, and this whole space had been filled in with hot pitch, up to the floor level. But while the Gods giggled at these fifteen barrels of pitch, the tank still leaked! The solution bubbled up between cracks in the pitch, which even so, wouldn't bind on the acid soaked wood. Some time, possibly two weeks later the entire tank was empty.

Then after the cyanide copper had been coaxed and corrected back into shape where it wouldn't "blister" anymore, this nightmare of a tank had to be chopped out of its wall of solid pitch with crowbars and axes, taking the labor of two colored men a week to free it. After this it was salvaged again, and with new bolts and a lining, was made into a nickel tank.

Cleaners as Addition Agents for Nickel

When we tried the nickel solution for the first time as a matter of test, a few bumper tubes, copper buffed, were hung into the nickel, and upon removal and hot rinse, were hung on a rack. In 30 seconds the contraction of the metal from hot water to cooler atmosphere

began to split the nickel coating. Without a touch of the hand, the plate began to crack, split and roll from the tubes as if bewitched. One opinion volunteered was that the nickel had "a curse on it," which reminded me of what some old timers also believed when things went wrong. But another confidentially whispered bit of information was to the effect that someone had ordered the night watchman to pour into the nickel tank a pail full of hot prepared cleaner, "to make it work right." After hearing this later tid-bit of news, we decided to start fresh and build a new solution. Securing a comparator set as quickly as possible, the new solution was soon in running order, a lead coil installed for hot operation, and a home-made filter with gear pump, preventing "sand paper finish" and earning the gratitude of the buffers. Luckily, that tank had been lead lined, but in draining out the old solution, one of the 4½ foot long anodes was discovered fallen from its rod, and standing against the lead wall in such a way that when tubes suspended in the tank touched the fallen anode, the lead sheet became negative, and took on a heavy succession of nickel coats. We pulled successive layers of nickel from the lead like wall paper.

The Bottom Drops Out of the Market

Between struggles with green polishers, shifting and adapting of equipment, building racks and adapting them to the overhead trolley hand conveyor system, weeks passed. Order slowly evolved out of complete chaos. The customary bus line was up, with branch lines and rheostats. A double throw switch on the cleaner made for efficient electro-cleaning. The overhead trolley rattled back and forth bearing rack-loads of work to and from the tanks. All was set, except for continued watchfulness with those polishers and buffers. Over a year passed with production going by the clock. All at once the concern sold out, and in mid-February of 1928, the entire equipment, lock, stock and barrel, (solutions in the latter), was moved on trucks to an eastern Ohio city. Again the writer reassembled and set it up, coming back into operation with extended and improved equipment, and most of the greenhorn gang following, by this time fairly able to handle themselves with careful inspection of their work. There followed seven months of a full production run. And then the "bumper with the headlights," passed out, like so many other auto accessories which had been the fond hope of a group of investors. Nearly two years of employment were over, and are now occasionally recalled with a wistful smile for the dizzy battle to get it in operation while the dream of directors was a daily production of five or ten thousand.

Present Practice in Refining Gold

Q.—I am a subscriber to **Metal Industry** and would like to have some information regarding present practice in refining gold plated articles to recover the gold. What method or methods are being used to strip the gold; is it being done electrolytically or by acid methods?

A.—The choice of processes to be used in a refinery will depend upon several factors, including the quantity of material to be handled at a time, the character of the material, the degree of purity required in the finished product, and the cost of electrical or other power in the locality chosen. As prices of metals fluctuate, there may be need to modify the methods to meet these changes. When we speak of the character of the material refined, we refer to its richness in precious metals, its physical form (whether clean metal scrap or filings mixed with considerable dirt, sand, etc.) and the nature of the base metals present.

From this it can be seen that a full description of the methods being used would involve a discussion much longer than this department could accommodate. It should be noted, however, that gold **plated** articles—the kind you mention—are bought by most professional refiners at a price which appears to be relatively unduly low. That is because the refining of such goods is more difficult that it at first appears, the presence of soft solder complicating the process. Most professional refiners who receive it at all, work it in with other types of waste. For instance, when very large quantities are available, they may be sold to a **copper** refiner, who will work the plated scrap in with his impure copper, the gold being recovered as a by-product.

Ferrous sulphate is one of the old and popular precipitants, and is still one of the most widely used chemicals in this work.—**Jewelry Metallurgist.**

Leaky Aluminum Castings

Q.—We have been having lots of trouble with the aluminum steam iron castings and hope you will be kind enough to help us out. The castings we make have two cored pockets inside, one for steam and the other for water. At first we had lots of trouble with the cores and after much experimenting we found the right mixture of sand to use and proper venting.

Now, when the castings are done we find that when they are tested under 75 lbs. steam pressure they leak at the nose. Our mixture is 93 aluminum, 5 copper and 2 silicon. Will you kindly let us know from your experience what metal to add to this mixture to prevent leaking, or do we have to use a different mixture?

A.—We suggest you change your mixture to 12% copper, 2% silicon, 86% aluminum. Make a hardener composed of 60% copper, 10% silicon, 30% aluminum. Pour in ingots and use as follows: melt 80% aluminum, add 20% of this hardener. Stir the metal well. Do not overheat the metal. Keep around 1350°F.

Five minutes before pouring add aluminum flux such as zinc chloride removing gas from aluminum. Plunge this material to the bottom of the crucible by confining the flux in a container suitable to allow you to force the flux to the bottom of the metal. When bubbling ceases the whole mass should be violently stirred. When this reaction is complete, the dross should be carefully removed.

Master Founder.

Chromium Plate on Sewing Machine Parts

By FRED B. JACOBS
Cleveland, Ohio

Procedure of the White Sewing Machine Company, Cleveland, Ohio

VARIOUS advantages of chromium plate such as hardness, ability to withstand the action of common acids, distinctive pleasing finish, etc., have been set forth so many times that any elaboration of these advantages is superfluous. While it is true that the process is simple, success is possible only through paying attention to many minor details. Thus to add a chromium plating plant to any manufacturing enterprise is to assume an additional production expense. However, this expense is well worth the price for one basic reason. That is, chromium plated articles command instant attention and this little factor, insignificant in itself, breaks down sales resistance. The good housewife may know absolutely nothing about the many advantages of chromium plated articles, but place before her two household appliances, one finished in nickel and the other in chromium plate and she will select the latter nine times out of ten, regardless of price.

The White Sewing Machine Company, Cleveland, has been making a high class product for over half a century and great attention always has been paid to finish. Thus today the company operates an efficiently conducted chromium plating plant for finishing the prominent bright parts of its product. The number of individual pieces that pass through the chromium plating department yearly is prodigous and with the exception of very small parts such as screws, each unit must be given a certain amount of individual attention.

Following the accepted practice, the parts are cleaned, nickel plated and buffed in the usual way before coming to the chromium plating department. Thus a rapid and efficient means must be provided to prevent various units from being scratched and ruined. The general plan is to provide special rack boxes designed so that they can be stacked one above another with no danger of marring the contents. A representative rack box is shown in Fig. 1. This unit accommodates 96 hand hole cover plates. A large variety of these boxes to hold various parts must always be kept on hand, and the one illustrated is representative of the general design.

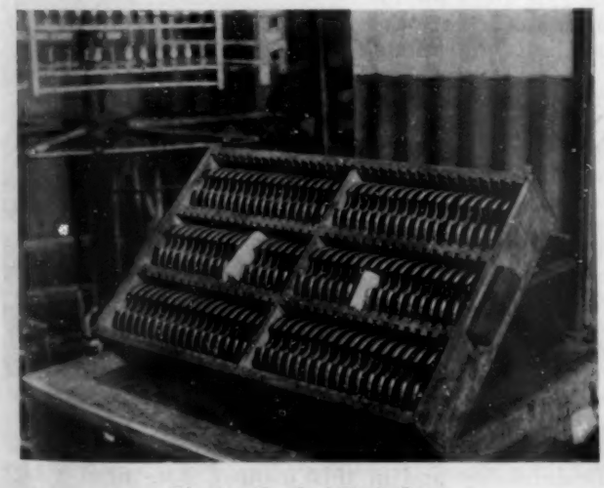


Fig. 1. Typical Rack Box

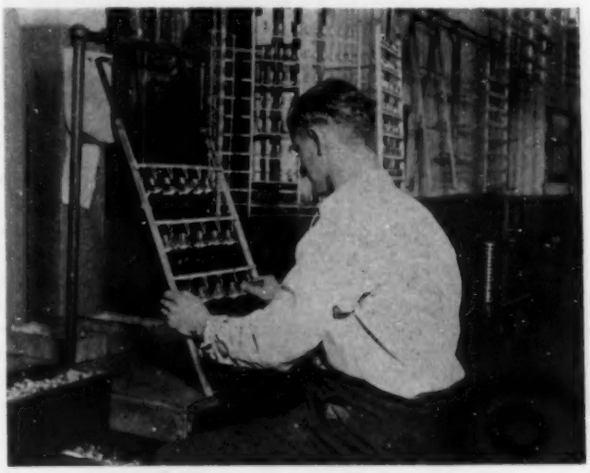


Fig. 2. Racking the Work

The majority of parts are racked for plating. In racking the parts the operator sits before a bench as shown in Fig. 2, with the rack hung before him on a support made for the purpose from ordinary 1 inch pipe. It is necessary to keep a large number of racks on hand constantly, for while one type of rack may accommodate a variety of parts, a large number of the units necessitate special racks.

As fast as the various parts are racked, they are hung on the revolving rack stand shown in Fig. 3 which is made from pipe and designed to hold 12 racks. The stand is within convenient reach of the plater near the first cleaning tank so that the work can go through the plating department in a continuous line without unnecessary back tracking. A general view of the plating department is given in Fig. 4. Each tank is provided with hoods so that steam and fumes are carried away by means of an exhaust system. Fig. 4 illustrates the efficiency of the ex-

haust system graphically for it shows that no steam rises above the lower level of the hoods.

Small parts, such as screws, parts that cannot be racked readily, etc., are placed on baskets or frames made of copper wire mesh, say about 3/16 inch mesh. The mesh has a rail around it about ¼ inch high, and the frames are about 18 inches long and 12 inches wide. Electrical connection is made by two arms one at either end of the frame and these arms hook over the cathode bar over the tank. The voltage for this work is approximately 10 as against 4 to 6.4 used with ordinary racked work. Of course in loading

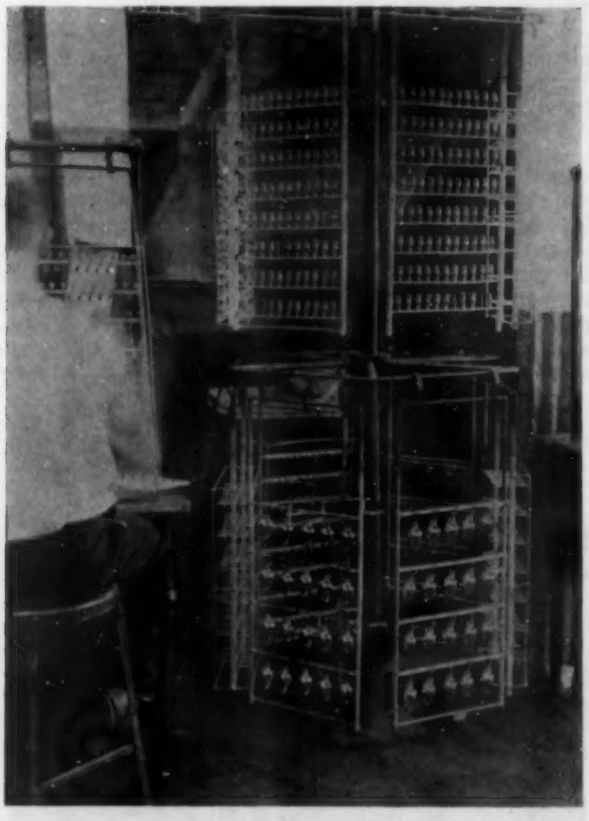


Fig. 3. Revolving Rack Stand

these frames the operator must use due care to distribute the parts evenly so that they are not piled one above another which would of course result in faulty plating.

The general procedure through the plating department is as follows:

1—Rack	7—Rinse
2—Clean	8—Rinse
3—Hot water rinse	9—Rinse
4—Dilute acid dip	10—Rinse
5—Cold water rinse	11—Inspect
6—Chromium plate	

The first operation of racking has been explained. The second operation, cleaning, is done in a boiling commercial cleaner, and Operation 3 is self explanatory. In Operation 4 the solution is dilute sulphuric acid. Operation 5 needs no comment. In Operation 6 the current for ordinary basket work is about 10 volts in the plating operation and from 4 to 6.4 volts for rack work. Time for plating is approximately 15 minutes for baskets and three minutes for racks. The voltage and time of course must be changed slightly to suit specific conditions. The temperature is 113° F.

The seventh operation, rinsing, catches the drag-out

Fig. 4. Plating Tanks

from the plating tank and this solution can be placed back in the plating tank from time to time. The eighth operation, rinsing, is done in boiling water, while Operations 9 and 10 are hot water rinses.

The eleventh operation of inspecting is done in a special booth designed for the purpose as shown in Fig. 5. The inside of the booth is painted white and a support provided for the racks as the illustration shows. Overhead are four, 200 watt electric lights so shaded as not to glare. Thus under this intense light it is possible for the inspector to note minute flaws that otherwise would pass unnoticed. After a careful inspection the parts that pass are placed in special rack boxes as before described. Many small parts of course are not stored in such containers as they can be handled without danger, several hundred or thousand in one box. However, these boxes always are paper lined and kept free from dirt and grit.

In some cases no buffing is necessary after chromium plating. This applies generally to comparatively small parts. However, many units such as hand hole cover plates, light shades, etc., are buffed on muslin wheels with chrome rouge.

Aside from the fact that the chromium plate must present an attractive appearance on the company's product, the plate must be of an enduring nature for a sewing machine has a comparatively long life and operates under all sorts of conditions ranging from the intense cold of the north to the humid temperatures of tropical climes. Further, the salt atmosphere of seaboard localities must be considered. While it is a fact that chromium plate correctly applied is remarkably free from injurious after effects the White Sewing Machine Company is constantly subjecting samples of its chromium plated parts to various tests to determine its durability and in this manner it assured a high grade product.

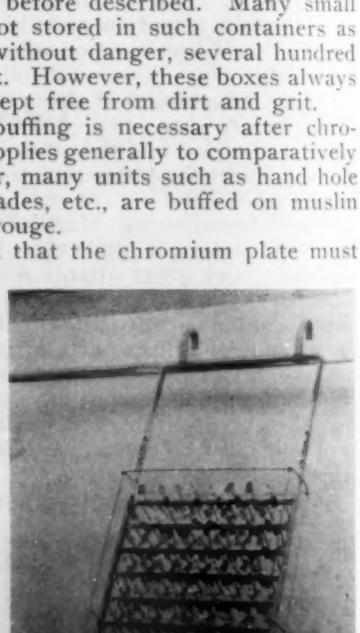


Fig. 5. Inspection Booth

A Brass Foundryman's Progress

By OTTO GERLINE
Formerly President, Gerline Brass Foundry, Kalamazoo, Mich.

How a Boy Grew Up to be a Brass Foundryman. His Adventures, Joys and Sorrows, as Told to W. J. Reardon.—Part 11*

DEAR Billy:

When I arrived in Peoria, I looked over the foundry and the work being done there and found that besides manufacturing a special extra heavy globe valve, they also ran a general jobbing foundry.

I was hired on thirty days trial at $4.00 per day. I also found that they were up-to-date in their foundry and had four first class molders, two good coremakers and one of the best furnace tenders, or melters, it was ever my pleasure to work with, Ed Fitzpatrick. He was simply a wonder. He would find out from the molders in the evening what they were to work on next morning and the numbers of molds they would put up, and he would light up enough furnaces to handle the job. The molders would get their metal on time, and they would not have any more than necessary. In other words he would not melt a full pot of metal when only half a pot was needed; I mean special metals of course. If a man was on a heavy job and needed two furnaces, he had them. There were never any molds left over at night, nor was there metal melted to be poured out in ingots. Ed would use less coal or coke than any other man I ever worked with. He would gather spillings and take care of them in such a way that they never became mixed, and the so-called floor scrap, so costly in many foundries was absent. I hope "Fitz" will see this.

The molders were also good, and in fact I learned a lot in that foundry from those men. I left them alone as much as I could, helped them in some classes of work which I perhaps understood a little better than they did, and so I got along very well.

The firm had, before my time, some of the best foremen from Chicago, but somehow none of them stayed very long. I talked to two of them in Chicago, and made up my mind I would not make the same mistakes they had. I took charge, and informed the then superintendent at once that if he was in the habit of running the foundry there was no need to hire me to run it, and carried this out for a little over one year. His attempts at interference became so strong towards the end of my year that I lost my temper one day, and there was a nice set-to in which he came out second best and I lost my job, for fighting was not allowed, or at least not expected, from a foreman.

I had known this was going to happen sooner or later, so I had a bobber out for another job, and when the side show came I had a job all cinched. In fact I had the job before I started the show. I convinced that superintendent however, that he was not as tough as he thought he was, and the next foreman had a better time of it.

I left Peoria for Three Rivers, Michigan, in 1900, and took charge of the brass foundry for the Sheffield Car Company, a subsidiary of Fairbanks Morse & Company. Here I stayed thirteen years. Two sons and one daughter were born to us there. Also this is where I got real brass foundry practice.

We did only our own work at the start and no jobbing, or outside work. I had the privilege here of buying all metals, and so I got experience along these lines. I had full swing to experiment with different metals and with their chemists and testing machines at my disposal, I assure you I made the best of it. I made a lot of mistakes and cost the company more or less money, but I made it up for them in time, and then some. I got $4.00 per day at the start. Later I figured we could do some jobbing work along with our regular work, and we made an agreement that for every dollar profit I could make for them on outside work that I brought in, I was to get twenty-five per cent.

We had three molders when I took charge of the foundry. Later I worked ten to twelve molders and I was making a nice salary. In the meantime I was promoted to the managership and the foundry was called the Three Rivers Brass Works. I had a good foreman working with me and I had the best time of my life. I liked the road work and got a great kick out of it all.

I also had the help of their cost department and the bookeepers and stenographers were all good friends to me and helped me along those lines. All in all, I learned a lot about the business end of a foundry,—buying, selling, cost, profit, dividends, etc. The personnel of the company were all real people, and never in my life have I worked with squarer men than the officials, as well as the men then employed by the Fairbanks Morse Company. I had as my friends, Mr. Charles Morse, president, and now Chairman of the Board, of Fairbanks Morse & Company, down to the night watchman and the office porter, and to this day I have a lot of friends in the little town of Three Rivers, Michigan, a fact of which I am very proud.

I must tell you the funny condition I found down there when I arrived. There were three men making

*Parts 1 to 10 were published in our issues of July, 1929; November, 1929; May, 1930; August, 1930; February, September and December, 1931; July, 1932; June, 1934 and March, 1935.

brass castings, and believe it or not, I have never seen any worse looking stuff than those fellows turned out. The regular foreman had left some time before, and the men were running it to suit themselves. One or two were kept busy running up town with a bucket for beer. When I stopped this, they went on strike. That didn't do any harm because I personally could make more good castings myself in one day than the three of them could in a week.

Before I left here I was making as much as $12,000 per year for the company, and so you see, with my commission and salary, I was making nice money for a molder in 1912. I spent it freely however, on motor boats, automobiles, and once in a while attending Foundrymens' Conventions, backing baseball teams, fighters, and bowlers, so when I left the company to start for myself I had only $1500 cash to put into it and a few hundred dollars for my family to live on while we got the foundry started. I will come to this later.

I figured that if I could make that much money for someone else I could make it for myself, and as I got all this work into the foundry personally and our customers trusted me completely, it was not very hard to get started.

I selected Kalamazoo, Michigan, twenty-four miles north of Three Rivers, a city of about 50,000 at that time, as most of our customers were located there, and inasmuch as there was no first class brass foundry in the city then, I made no mistake.

I sold my house in Three Rivers, which I had bought through the Building and Loan Association, and realized about $1800. I should have had a home paid for and $5000 in cash if I had had sense enough to save my money, but I didn't, so there you are.

The company and the employees and a good many of the Three Rivers people hated to see me go, and to tell the truth, I had a lump in my throat when I left and moved my family to Kalamazoo. However, my customers were glad to have me in Kalamazoo.

I purchased some of the equipment from the Fairbanks Morse Company at very good prices as they decided to do their own work only and not attempt to do any jobbing work after I left. I left them a very good little foreman whom I had trained myself, and so I left the company with the best of feelings. In fact while we were building our foundry in Kalamazoo, I spent a good deal of my time up there and the company paid me right up to the time we started to make castings in our own foundry. I will always have a friendly feeling for Fairbanks Morse & Company, in my estimation, the best people I ever worked for.

In my next letter I will tell you all about our trials and tribulations in our own foundry. Three of us started the foundry and it was named the "Gerline-Meyers Brass Foundry Company, Inc.," Mr. Meyers, for a time foreman under me at Three Rivers, being one of the three. Sam Franklin, a wealthy junk dealer was the third man. He, by the way, had the money, and Meyers and I did the work, with yours truly doing most of it.

I will close now and keep the most interesting part (to you) away from you for a while.

Britannia Metal Mixtures

Q.—We have a large amount of Britannia metal for articles we silver plate. Our mixture is:

90%—Tin
8%—Antimony
2%—Copper

We have seen a Britannia metal which is harder than our metal, and in fact has a ring like nickel silver, although we understand it is Britannia metal. Could you give us any information as to a mixture that would make a harder Britannia metal than our present mixture?

A.—The better way for you would be to submit a sample of the metal that you claim is better than the mixture you are using and have an analysis made, and duplicate that mixture.

We could suggest possible different mixtures for Britannia metal. Britannia metal is composed of 90.7 Tin and 9.2 Antimony—Hard,—and 94 Tin and 6 Antimony—Soft. Other alloys called by this name consist of Tin, Antimony and other metals in small quantities, such as copper, zinc, lead, bismuth.

Britannia is white in color with a bluish tint. It takes a high polish. It is hard and malleable and ductile in proportion to the amount of antimony and copper. The latter, however, has its limits in quantity as it tends to impart a yellow tint and diminish the fusibility, according to Horns in his book "Mixed Metals". He gives in this book:

English Britannia Metal:

No.	Tin	Antimony	Copper	Zinc	Lead	Bismuth
1	94	5	1	..	..	..
2	90	6	2	..	..	2
3	90	7	3	..	..	..
4	89.3	7	1.8	..	1.8	..
5	85	5	3.5	1.5	..	5
6	80	10	9	..	1	..
Sheet 7	90.6	7.8	1.5	..	..	..
Cast 8	90.6	9.2	0.2	..	..	..
German	72	24	4	..	..	..
German	84	9	2	5	..	..

We do not like to recommend mixtures unless we know the class of work, etc. As we said before, if you desire to change your mixture, (which very often is not done with considerable thought) there is danger of lowering the quality of the work. We suggest analysis of the metal you wish to duplicate. It is better than experimenting on different mixtures to try to duplicate what you have in mind.

Master Founder.

Monel Metal for Pickling Equipment

Fig. 1 shows zinc chloride flux heating baths, lined with Monel Metal and equipped with Monel Metal heating coils and straps. These are used by an automobile radiator manufacturer for fluxing copper radiators prior to tinning.

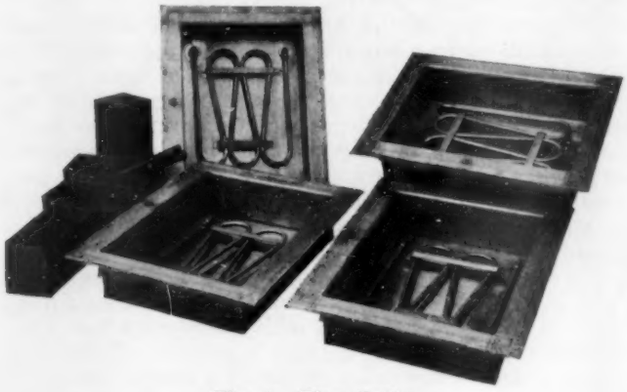


Fig. 1. Flux Baths

Figs. 2 and 4 illustrate special Monel Metal pickling drums for small stampings and drawn parts.

Fig. 5 shows automatic equipment for processing drawn and stamped brass shells for electric flashlights, auto hub caps, etc., including pickling for removal of annealing scale, acid rinse, neutralizer bath and final rinse. The rotating carrier drums and their trunnion hangers are of Monel Metal to insure their long life in this service. This unit was designed, constructed and erected for a prominent New England brass mill by the patentees, U. S. Galvanizing and Plating Equipment Corp., Brooklyn, New York, who advise that the cost of the entire installation was saved in the first nine months of operation.

Fig. 2. Pickling Drum

Fig. 3. Dipping Baskets

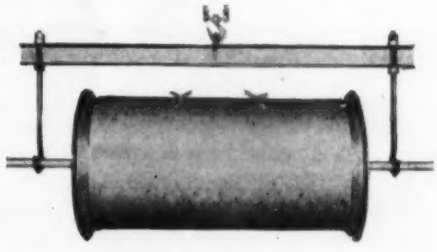


Fig. 4. Pickling Drum

Many Monel Metal wire dipping baskets have been in use at the plant of the Edison Storage Battery Company for more than seven years. See Fig 3.

Fig. 5. Automatic Equipment for Processing Brass Shells

Photos by courtesy of the International Nickel Company

EDITORIALS

The Future of Electroplating

ONLY recently we received an earnest letter from one of our readers asking for our ideas about the future of electroplating. Are the new alloys which are being developed in such large numbers, likely to replace metal coating and finishing? Will solid metals, resistant to corrosion and attractive in appearance, eliminate electroplating and metal coloring?

It was an honest letter and we were glad to be able to answer it with equal honesty, in an optimistic tone. To our mind, there is no danger whatsoever of electroplating being eliminated by the development of non-corrosive alloys. There will always be a field for plating and metal finishing as there will always be a place for a process which protects and beautifies inexpensive base materials.

Metal coating and finishing like every other industry at this time, is suffering. The job plating business, for example, is not an easy one, subject as it is to the general evil of over-capacity and unintelligent competition. Perhaps if the electroplating industry were asleep, perhaps if it did not realize its competition from outside as well as inside, there would be some danger of its being pushed aside. But this situation is decidedly not the case.

The best evidence of the alertness of electroplating and electroplaters is the coming Convention of the American Electro-Platers' Society in Bridgeport, Conn., June 10-13, and the Second Annual Meeting of the Master Electro-Platers' Institute in the same city, June 8-9. The American Electro-Platers' Society is made up of the leading technical and practical men of the industry. The subjects which they will discuss are listed in full in the leading article of this issue, and need not be repeated here, but it is in order to point out that two of these subjects attack a basic problem of the industry, with every prospect of solving this problem. The convention will pass upon specifications for plated coatings on steel, and will send its conclusions along to the American Society for Testing Materials to act upon at its coming meeting in Detroit, June 24-28. Moreover, the related question of methods of measuring the thickness of electroplated coatings will necessarily also be discussed.

There is no point of greater importance to the manufacturer of metal products than specifications and methods of testing. It is not only the platers who will be affected; it is also the sales force, the purchasing agents and the owners who will feel the results of setting standards for a process which has long been at loose ends. It will be vital for every manufacturer of metal products to familiarize himself with these specifications. It will be the wise manufacturers who send their representatives to the Convention and take a hand in setting these specifications by means of their intelligent advice and criticism.

The meeting of the Master Electro-Platers' Institute is of no less importance to the industry. This organization of job platers has worked now for two years against unbelievable odds to bring stability and fair-dealing—"Co-operation in Competition"—to an industry which has long been the butt of its customers' jokes and in many cases the object of their contempt. We betray no secrets in making so blunt a statement, and we make no exaggerated claims when we say that the improvement in the morale of the job plating industry effected by the Institute in its first two years has lifted platers a long way up from the slough in which they once lay. They are now sitting over a table together. They have found out that the other fellow is a human being, an honest man with a family to raise; that many of the occurrences which looked like double dealing were unintentional mistakes, or in many cases misconceptions fostered by unscrupulous purchasing agents.

The way is still rough and stormy. Business is far from good. But between the technical standards of the American Electro-Platers' Society and the business standards of the Master Electro-Platers' Institute, the future of the electroplating industry is safe. One of these fine days it will be bright.

The Business Situation

THE general business situation in the first quarter of 1935 and the beginning of the second quarter has been something of a disappointment. Although a rise was in evidence for a short time the decline which started in February has continued with only slight intermittent reactions. The New York Times Weekly Business Index stood at 81.5 on May 11, having declined from about 88. The National Industrial Conference Board reports industrial activity lower during April and the first half of May. Two industries have good records, automobile production and residential building. Automobile production is far ahead of last year, production in April having been 28.6% higher than in April, 1934, and 5.7% higher than in March, 1935. Registrations of new passenger cars for the first quarter were 97.2% above the first quarter of 1934. However, this activity seems to be tapering off. The total building and engineering contract awards in 37 eastern states increased in April by slightly less than the usual seasonal amount. Residential building contracts, however, which were the outstanding bright spot of the month, rose 31.3% in April over the March figure, and March was 93.8% above February. For the first four months of the year, residential contracts

were 41.2% higher than for the same period of 1934, but this one branch of industry was not enough to pull up all of the others.

We are facing now the beginning of the expenditure of $4,000,000,000 by the Government for work relief. Exactly what this expenditure will do is difficult to predict accurately. If wisely spent its effect will be felt without any doubt, not only in general consumption goods, but in durable goods which are so sadly in need of a lift. Wise spending will take courage on the part of the spenders. It is an open secret that the political pressure on the Administration is tremendous. Organized labor has registered its objections in no uncertain terms to the wage scales set forth (from $19 to $95 per month, depending upon the type of work and the geographical location.) The Administration seems to be standing fast on the principle that the rates must be higher than direct relief to attract workers away from the "dole", but lower than the wages paid by private enterprise, so that business can get workers when it needs them. Courage will also be necessary to keep from dividing the "spoils" among the "politically deserving."

We can only hope that this unprecedentedly huge fund for relieving unemployment, "priming the pump" or what you will, will be wisely administered. It will be no easy task.

America and Tin

A BILL was submitted by Congressman McReynolds chairman of the House Foreign Affairs Committee on April 23 (HR 7675) calling for the creation of a Board for Strategic Materials. The immediate project which this Board will undertake will be the attempt to establish a tin producing industry in the United States, by the following procedure.

1. Search for domestic resources of tin.
2. Discourage imports of metallic tin and establish a domestic tin smelting industry.
3. Undertake a systematic research for substitutes for tin.
4. Provide for some prohibition of scrap tin exports.
5. The assessment, on proclamation by the President, of a processing tax of 6c. per pound on all imported metallic tin. Moreover, under the Tariff Act of 1930, as modified in the McReynolds Bill, there would be an additional import duty of 6c. per pound when and if domestic mine production reached 1500 tons of metallic tin per year.

The cost of the above work will not be large, as we are used to figures these days; only about $1,500,000 to be spread over a period of five years. The important (and the opponents of this Bill, say, "dangerous") point in the Bill is No. 5. One immediate fact to be faced is that this will add from $7,000,000 to $14,000,000 per year to the costs of tin consumers. That this cost is not excessive if the measure were to do any good, would be generally admitted. It is pointed out however, that no tariffs will help to establish a tin industry in the United States, for the simple reason that there are no tin deposits here. For decades the mining interests have been searching for them with practically negligible results. Domestic smelting has also been tried, by two of the most capable, experienced and financially responsible metal producers. Their attempts were unsuccessful. We must recognize the fact also that the establishment of a smelting industry might leave us in the same weak position as we would still be dependent upon foreign ores.

The third point is to our mind the most logical. If we have no tin in the ground and national defense demands that we must be protected against a shortage of tin over which we have no control, one way out is to learn to do without it. This is certainly not easy and perhaps it is impossible. But here at least a strong effort might be made.

It is true that some of the large consumers of tin have made important attempts on their own initiative to replace tin, so far at least, without conspicuous commercial success. But that is no proof that it will never be done. If our national defense is absolutely dependent upon a supply of tin, and if this supply which rests fundamentally upon ore deposits, is undependable, it would be worth while to search every possible nook and cranny for a substitute which could be used in an emergency.

In the meantime, there seems to be small reason for upsetting the businesses of the tin consumers with a number of measures which will be of no practical aid.

The Foundry of 1950

THERE is no more enjoyable game than picturing the future. It affords pleasure to people of all types and in all walks of life, from the sociologist who envisions the Future State to the preacher who paints pictures of the Future Life. About the accuracy of most predictions, the less said the better.

Occasionally, however, someone talks about his own work with which he is thoroughly familiar, and when he ventures a prophecy it is time to stop and listen. Such a forecast was recently given by Fred J. Walls, Metallurgist of the International Nickel Company, in an address before the Detroit Foundrymen's Association.

Mr. Walls prophesied that the future foundry would be completely air conditioned to eliminate dust and to equalize temperature. Lighting would be controlled automatically by photo-electric cells. Through the increased use of mechanical equipment much of the hard labor associated with foundries would be abolished. Foundrymen would all be "alloy minded"; waste would be cut to the minimum by rigid inspection of raw materials, using such modern methods as X-ray analysis, the spectroscope, high-power microscopes and electro-analysis.

Perhaps it would have been more accurate to have applied this description to the "best foundry of 1950." Perhaps the date might safely be shifted forward a few years. Undoubtedly, in any year one would care to mention, there will be foundries using old-fashioned methods, because there will always be situations where old-fashioned equipment and old-fashioned processes will be the best for some particular job.

In principle, however, Mr. Walls was undoubtedly right. Cleanliness, mechanical equipment, special alloys, inspection and testing methods—they are already here to a considerable extent and they will be with us to an even greater extent in the future. The foundry of tomorrow may not be a parlor but it will be a cleaner, healthier, pleasanter and more attractive plant than it was yesterday or is to-day. Let us hope that it will also be more profitable.

Correspondence and Discussion

Making Strong Brass and Making Brass Strong

To the Editor of **Metal Industry**:

Mr. Corson's article in the March and April numbers of **Metal Industry** seems to refer exclusively to alloys of copper and zinc without intentional additions of tin or lead. At the same time it is evident that many of his statements are meant to apply to foundry sand casting practice. So far as I know, the true brasses, consisting exclusively of copper and zinc, are used very little, if at all, in American foundries, being confined almost entirely to the rolling mill and the forge shop.

Insofar as Mr. Corson's statements are meant to cover foundry practice with these true brasses, I would not presume to criticize anything he has to say since my foundry experience with these alloys is practically nil. If on the other hand, Mr. Corson does mean to include the yellow and red brasses and bronzes which make up almost the whole of ordinary foundry production, then I find myself forced to disagree with almost everything he has to say. I feel quite sure that any foundryman attempting to follow the "Practical Suggestions" given on Page 120 of the April issue would find himself in very serious and continuous trouble for a number of reasons.

As an example of what I mean, I need only cite the author's comments with regard to the desirability of aluminum in the alloy. If this is intended to apply to the usual foundry alloys, whether yellow or red, all foundry experience, including incidentally my own, as well as practically all published experimental work, would indicate that to follow his recommendation would lead to disaster. At the outside, not more than .01% aluminum can be tolerated in foundry castings which must stand pressure, not entirely because of the presence of aluminum oxide but more particularly because of the influence of dissolved aluminum on the crystal structure. I have mentioned this matter of aluminum as perhaps the most important exception which I would take to Mr. Corson's recommendations; there are a number of other points of almost equal importance which I hesitate to discuss in detail without being sure that Mr. Corson intends his remarks to apply to the usual foundry alloys. If they are meant to so apply, a great deal should be said; if not, it is futile to disagree.

If we assume that Mr. Corson does not mean to have his suggestions apply to alloys which normally contain tin or lead, then it seems to me that there is quite a little danger that this fact will be overlooked by the foundryman unless it is more strongly emphasized. The average foundryman, knowing that straight copper-zinc alloys are scarcely ever used in foundry practice, is apt to assume naturally enough that the author's statements and recommendations are intended to be of assistance in ordinary foundry practice. As I see it, this would be a dangerous assumption.

Detroit, Mich. **H. M. ST. JOHN,**
Chief Metallurgist,
Detroit Lubricator Company.

To the Editor of **Metal Industry**:

In reference to Mr. M. G. Corson's article on Page 150, April number of the **Metal Industry,** 1935.

My experience has shown that many of his statements are not correct:

No. 1—"Ingot metal is better than new." I have found better and sounder castings with better strength are produced when virgin metal is used.

No. 2—OK.

No. 3—I have found aluminum detrimental to all grades of red brass, even in small amounts.

No. 4—Partly OK.

No. 5—I have found it necessary to vent molds if any quantity of metal is poured in the mold, and would not recommend any such thing as not venting.

Nos. 6, 7 and 8—OK.

No. 9—I have found any covering of metal—let it be what you desire—is beneficial to melting metal; and deoxidizers are not only helpful but necessary; balance partly so, but not all.

Detroit, Mich. **W. J. REARDON,**
President, National Alloys Company.

To the Editor of **Metal Industry**:

To properly answer the criticisms of Messrs. H. M. St. John and W. J. Reardon, I must begin with a few remarks:

Broadly speaking foundry alloys with a copper base may be subdivided into:

(1) Pure or nearly pure brasses.

(2) Tin bronzes with or without small amounts of zinc, lead and phosphorus.

(3) Highly leaded bronzes in which plasticity is one of the main requirements.

(4) Cut and try compositions, mainly designated by numbers, such as 85-5-5-5, 88-10-2, etc.

In my articles **I did not refer to the third and fourth group at all.** When I wrote about brasses I wrote about zinc brasses containing perhaps, small amounts of lead, tin, nickel, etc.; not leaded bronzes.

On the other hand I insist that what I said is fully applicable to straight bronzes, especially Admiralty gun metal with 8-10 per cent tin, 2-4 per cent zinc and up to .5% lead. These alloys are not afraid of aluminum even if present to the extent of one per cent, provided a sufficient allowance is made for the replacement of tin by aluminum. In other words, one cannot use 10% tin and 1% aluminum and get away with it in gun metal. But 10% tin and .1% aluminum with 1.5% zinc produces an excellent metal. It has all the strength of the best gun metal, an excellent golden color and no sand will burn in into it. Blasting expenses are reduced to a minimum; can sometimes be completely eliminated.

Aluminum oxide is largely a bogey man. There is too little of it to affect the metal in any way. Perhaps it may produce a poor polish here and there, though I doubt even that. And it certainly does not change the structure of the crystals in either straight brass or the Admiralty gun metal.

As to the influence of aluminum upon leaded bronzes I have no first hand information and cannot presume to speak with certainty on this point. But I insist that this point was never sufficiently investigated, or at least it was never sufficiently described. I maintain that this subject needs a careful investigation. I shall agree to acknowledge the "aluminum prejudice" only if shown by the results of carefully conducted tests, micrographs etc. that it is really deleterious in leaded bronzes.*

And now a few lines regarding the use of straight brasses in the foundry. In Europe they are used in large amounts and there is no reason why they should not be used here.

I advise the use of straight or nearly straight brasses for the following reasons:

(1) They are the least expensive alloys of the whole lot.

(2) They can be made by buying scrap wrought brass in all its shapes, remelting, ingoting, analyzing and doctoring up to any composition including high strength brass.

(3) They will possess a strength of about 50,000 lbs., an elastic limit of 15,000 lbs. and an elongation of at least 45% if containing 36% zinc and not less than 65,000 with 12,000 lbs. and 35% if containing 40% zinc; and these figures are obtainable without any difficulty in a careful melting. They solder, braze and weld without any hitch. No other foundry alloy can compete with them in this direction.

(5) A prolonged exposure to heat can ruin a tin bronze, especially a leaded one. No heat ruins a cast brass. It may be completely homogenized by annealing at 1100° Fahr. and still retain the initial strength, hardness and elastic limit, to say nothing about elongation which is improved (even though this improvement is not needed).

(6) In contact with brass piping (30% brass) cast parts of a 36% brass develop practically no potential difference, therefore such a combination does not produce an accelerated or selective corrosion.

*There is upon the market a bronze composition containing 8% Al and 9% Pb, but no tin. If 8% Al and 9% Pb can make peaceable neighbors in one alloy, the whole situation calls for a thorough revision.

(7) A piece of cast brass (36-40% zinc) can be further shaped or reshaped by heating it to a red heat and hammering, hot punching etc. No leaded bronze will stand it.

And the composition which I recommend most highly is: 36% Zinc; 0.1% Aluminum; 0.5% Lead; balance Copper.

Every progressive foundryman ought to consider this mixture. He can use it for permanent mold, plaster of paris, concrete or die casting as well.

Consequently, I highly recommend straight cast brass in nearly every case where the part does not have to resist mechanical wear or does not have to stand up against some specific chemical agent. In general, however, cast brass is not a bit more corrodible than cast bronze. In many cases the corrosion is less rapid for brass.

Answering specifically the remarks by Mr. W. J. Reardon I wish to say that:

(1) Ingot metal in my experience was always better—provided it is bought from a responsible concern who know what they sell. The reason for it is as follows:

(a) It takes less time to melt an ingot and its temperature will not rise as high as it will when pure copper is to be melted first; hence less chance for accidentally gassing the metal.

(b) Freshly made alloys contain foreign substances in a not completely divorced state. Oxides and slags separate first in the shape of an emulsion, then go into suspension. During the heating period previous to the melting of the ingot they get a chance to coalesce completely and to float away.

(c) Gases are (in my opinion) absorbed by metals only when they are ionized. The gas which escapes from the metal upon solidification is neutral and therefore immune to absorbtion. And when a brass gets liquid at 1800° F. this gas has a chance to escape.

(8) I agree that venting may be needed when the sand is rather damp or contains carbonaceous material which it should not contain. In some American brass foundries I have seen torches of burning gas streaming from the molds. Naturally in this case venting is most needed. But proper sand will not develop combustible gases and will not start steaming before the casting develops quite a crust of solid metal. For this steam every sand is porous enough. Venting does not hurt, but under proper conditions it amounts to a loss of time.

(9) Here again I can only state my experience: that except for some special alloys no covering is necessary and some like charcoal or glass, are detrimental to the metal and do no good to the crucible. Any alloy with as much as 1% zinc or .1% aluminum in it is sufficiently self protected, unless you need to keep the molten metal in the furnace for a couple of hours.

I disagree most emphatically with the idea that deoxidizers are useful or needed in a brass foundry or a bronze foundry. In the latter a deoxidizer is needed only when the melting starts from copper ingots. In this case the molten metal may run up to some .6% oxygen and a proportional amount of cadmium, phosphorus, aluminum, calcium, etc., may be added to eliminate this oxygen; and .5% of zinc added in the shape of a piece of brass will take care of it just as well. Therefore, in any metal that will contain above .5% zinc anyway no other deoxidizer is needed.

In remelting ingots of any bronze I have found a deoxidizer unnecessary. Here all the oxygen is bound to either tin or lead or iron and the particles of oxide floating here and there are quite immune to the attack of a dissolved deoxidizer.

What a deoxidizer really does is to expel a part of the gases absorbed. This is what makes "phosphor bronze" or gun metal more fluid. But a far better remedy is not to gas the metal.

Only copper-nickel alloys form an exception from the rule here expounded. In these alloys oxygen form a constituent—a well soluble oxide partly of copper, partly of nickel. Here the use of a deoxidizer (magnesium mainly) is most useful.

New York

M. G. CORSON,
Metallurgist.

Technical Papers

Fusible Tin Boiler Plugs. April, 1935, Technical News Bulletin of the National Bureau of Standards, Washington, D. C.

Use of the Pipette Method in the Fineness Test of Molding Sand, by Clarence E. Jackson and C. M. Saeger, Jr. Research Paper RP757. National Bureau of Standards, Washington, D. C.

Specifications for Foundry Sands. March, 1935, Technical News Bulletin, National Bureau of Standards, Washington, D. C.

Exposure Tests of Screen Wire Cloth. March, 1935, Technical News Bulletin, National Bureau of Standards, Washington, D. C.

Standard Tables for Chromel-Alumel Thermocouples. March, 1935, Technical News Bulletin, National Bureau of Standards, Washington, D. C.

Testing Thermocouples and Thermocouple Materials. March, 1935, Technical News Bulletin, National Bureau of Standards, Washington, D. C.

Standard Samples Issued or in Preparation. National Bureau of Standards, Washington, D. C. Circular C398.

Theory and Use of the Metallurgical Polarization Microscope, by R. W. Dayton, Bulletin No. 50, Rensselaer Polytechnic Institute, Troy, N. Y.

Disposing of Acid Fumes in the Jewelry Shop, by C. M. Hoke. Manufacturing Jeweler, March 7, 1935.

Measuring the Porosity of Tinned Steel. International Tin Research and Development Council, 149 Broadway, N. Y.

Peculiarities of Yellow Stain on Tinplate. International Tin Research and Development Council, 149 Broadway, N. Y.

The Nature of the Coating on Tinplate. International Tin Research and Development Council, 149 Broadway, N. Y.

White Metals in the Architectural Field, by G. F. Geiger and R. E. Case. American Chemical Society, 706 Mills Building, Washington, D. C.

Lead in the Building and Construction Industry, by George O. Hiers and Carlton H. Rose. American Chemical Society, 706 Mills Building, Washington, D. C.

Aluminum as a Material for Building Construction, by Francis C. Frary. American Chemical Society, 706 Mills Building, Washington, D. C.

A New Low Melting Alloy, by Sidney J. French. American Chemical Society, 706 Mills Building, Washington, D. C.

Melting Points of Lipowitz Alloy and Wood's Metal, by Sidney J. French. American Chemical Society, 706 Mills Building, Washington, D. C.

Atomic Arrangement in Metals and Alloys, by **Professor W. L. Bragg.** The 25th Annual May Lecture of the British Institute of Metals, 36 Victoria Street, Westminster, London, S. W. 1, England.

Current Aluminum Welding Practice. Essential Welding Features of Aluminum and its Alloys. Oxy-Acetylene Tips, May, 1935.

Government Publications

Simplified Practice Recommendation, R. 45-32 **on Grinding Wheels**; reaffirmed. Copies of the Recommendation can be obtained from the Superintendent of Documents, Washington, D. C., for 5 cents.

Rolled Zinc in 1934. Advance Summary. U. S. Bureau of Mines, Washington, D. C.

Proposed Federal Specifications for Valves, Globe, Bronze; Straightway, Angle and Cross (For Land Use). Copies obtainable from Federal Specifications Board, Room 735, Federal Warehouse, Washington, D. C. Comments and criticisms must be received not later than June 19.

(For New Books see page 222)

Shop Problems

This Department Will Answer Questions Relating to Shop Practice.

Black on Hot Dip Zinc

Q.—Can you give us a formula for coloring hot galvanized steel a black or dark color?

We are spraying galvanized metal with black lacquer and when lacquered the galvanized color shows through. We thought that if the galvanized coat could be darkened we could get a better looking finish with less lacquer.

A.—Use the following formula for producing a black color on the galvanized surface:

Nickel chloride	4 ozs.
Ammonium chloride	6 ozs.
Ammonium sulphocyanide	2 ozs.
Zinc chloride	½ oz.
Water	1 gallon

The solution is heated to 100° F. and the work is immersed until black.—Problem 5,389.

Blistered Silver

Q.—We are sending under separate cover sample of our silver strike. Also sample of silver solution. Would appreciate your analyzing both of these solutions as one of these is giving us the trouble which we will explain.

Both solutions have been satisfactory until, just recently, our work began to blister; but only after the finished article had been standing for a few days, even though the piece was without flaw before it stood for that length of time. It seems that only Britannia metal lead, and soft metals are affected in this manner.

We are using a commercial cleaner for all our cleaning; below are the original formulae of our silver and silver strike solution.

Silver:

Cyanide of potassium	12 ozs.
Silver	3 ozs.
Water	1 gal.

Silver strike:

Water	1 gal.
Soda cyanide	6 ozs.
Silver salt (commercial)	1 oz.
Caustic soda	¼ oz.

A.—Analysis of silver solution:

Metallic silver	2.10 ozs.
Free cyanide	5.67 ozs.

Analysis of strike solution:

Metallic silver	.97 oz.
Free cyanide	8.09 ozs.

The metal content of the silver solution is somewhat low and one ounce of silver cyanide should be added to each gallon of solution.

The silver strike solution contains too much silver. Would suggest that one-half of the solution be taken from the tank, then replenish with water and add 4 ozs. of sodium cyanide to each gallon of solution.

For soft metal two strikes are generally used, the regular strike and a special strike made of sodium cyanide 10 ozs., silver cyanide ⅛ oz., water 1 gallon.

If you still have trouble after making the suggested corrections, then look to the cleaning method used.

Problem 5,390.

USE THIS BLANK FOR SOLUTION ANALYSIS INFORMATION

Fill in all items if possible.

Date.....

Name and address: .....**Employed by:** .....

Kind of solution: .....**Volume used:** .....

Tank length: .....**width:** .....**Solution depth:** .....

Anode surface, sq. ft.:.....**Cathode surface, sq. ft:** .....

Distance between anode and cathode: .....**Kind of anodes:** .....

Class of work being plated: .....**Original formula of solution:**.....

REMARKS: Describe trouble completely. Give cleaning methods employed. Send small sample of work showing defect if possible.

Use separate sheet if necessary. _____

NOTE: Before taking sample of solution, bring it to proper operating level with water; stir thoroughly; take sample in 2 or 3 oz. clean bottle: label bottle with name of solution and name of sender. PACK IT PROPERLY and mail to METAL INDUSTRY, 116 John Street, New York City.

Nickel, Copper and Cadmium Solutions

Q.—Under separate cover we are sending you samples of 3 solutions to be analyzed, namely, nickel, cyanide copper and cadmium.

The nickel solution plates slowly and very dull. The cadmium solution plates dull. We would like to have it plate bright. The cyanide copper gives us the most trouble. It blisters, the throwing power is poor and it plates dark.

Nickel solution: contained in a wood, pitch-lined tank, measurement of solution in tank 28″ x 29″ x 7′; anode surface, 12 fish bone anodes 6″ x 24″; cathode distance 9″.

Cadmium solution: contained in iron, unlined tank. Measurement of solution in tank, 24″ x 36″ x 6′; anode surface, 10 anodes 24″ x 6″ x ½″.

Cyanide copper solution: contained in wood pitch-lined tank. Measurement of solution 15″ x 16″ x 42″; anode surface, 8 anodes, 4″ x 12″ x ½″; cathode distance 5″.

A.—Analysis of nickel solution:

Metallic nickel	2.04 ozs.
Chlorides	5.82 ozs.
pH	6.8

Add 100 lbs. of single nickel salts and 24 fluid ozs. of sulfuric acid to this solution.

Cadmium:

Metallic cadmium	2.29 ozs.
Free cyanide	5.17 ozs.

Indications are that you have added an excess of brightener, and if so, work the solution hard for some time to reduce it.

Cyanide copper:

Metallic copper	6.58 ozs.
Free cyanide	3.19 ozs.

Solution is too concentrated. Take half of the solution from tank, and then replenish with water.—Problem 5,391.

Nickel on Block Tin

Q.—We are expecting to nickel plate a large amount of block tin castings. Our present nickel solution is made up as follows: water, 1 gallon; nickel sulphate, 12 ozs.; ammonia chloride, 2 ozs.; ammonia, 4 ozs.; boric acid, 2 ozs.

We also have a die cast nickel. Which of the two would you suggest we use? We are not running the die cast nickel right now and could alter this solution if you would suggest it or make up a new nickel solution suitable to plate these block tin castings; they are small. They are used in the seltzer bottle industry. Will this finish be suitable for chromium plating?

A.—If your present nickel solution is in good operating condition, you can use this solution for nickel plating the tin casting before chromium plating.

Care should be used in cleaning the tin castings as a strong alkaline cleaner cannot be used. Consult your cleaner representative for the proper cleaner to use.—Problem 5,392.

Plating Non-Metallics

Q.—Would you kindly give me the formula of a silver solution, high in metal and low in free cyanide as referred by your Platers' Guidebook on page 22, in connection with electroplating non-metallics.

Also, I have had trouble with this process as follows: After following the procedure you recommend, I find that there are spots on the work that do not plate.

Could you tell me why this is so?

A.—The silver solution that is used for an immersion solution should be made by using 3 ozs. of silver cyanide and 3 ozs. of sodium cyanide to one gallon of water. The difficulty with the spots that do not plate is probably due to the mixture of the lacquer and thinner, or to the spraying operation.

Use a lacquer that contains a large amount of gum and then, by using 7 parts of thinner and 1 part of lacquer, spray a wet coat, allow to dry and then spray a mist coat and allow to dry thoroughly before plating.—Problem 5,393.

Silver on Copper

Q.—For spot silver on copper pans of large areas, we are using small wooden frames about 1 ft. square. The frame is set over the spot to be plated and is tightened by means of rubber gaskets which are arranged between it and the pan surface. The frame is clamped down from the outside. The rubber material is as sulphur free as can be had.

1. We found that although the spot plating itself can be done successfully, the old silver plating directly underneath the rubber gaskets which, previous to plating, was in good condition is, during the plating process carried into the solution. By rubbing vaseline over the rubber, this condition is apparently remedied but we are not sure whether or not the vaseline will affect the quality of plating. What other and better material, preferably plastic, could you recommend for the purpose of tightening the wooden frame against the pan surface?

2. How should the old plating be cleaned before the new silver is deposited, providing that the old surface is in a condition good enough to allow plating without removal? Usually there will be sulphur compounds on the top of the old silver.

3. What is the best amperage to use if a silver plating as dense and as fine grained as possible shall be obtained?

A.—We are unable to understand why the rubber gaskets would have the effect upon the silver that you say it has.

If the old silver is removed when the gasket comes in contact with it, the adhesion of this deposit is very poor, and it should be removed entirely before plating.

A polishing operation would probably be the best method of removing the old silver although a strip solution made of 5 parts of sulfuric acid and one part of nitric acid can be used, if it does not affect the surface too much. A current density of 3 to 4 amperes per sq. ft. is usually employed in silver plating.—Problem 5,394.

Stripping Nickel from Brass

Q.—We have been making buckles of gilders metal or bronze, and then nickel plating them. Sometimes the nickel fails or for other reasons has to be removed, for other work to be done on the buckle. Are you able to furnish us with a formula for eating this nickel off the buckle that will not hurt it, as we have been putting them in acid and find that it harms the buckle considerably.

A.—Use the following mixture of acids to remove the nickel from the brass work:

Sulfuric acid	2 to 3 parts
Muriatic acid	1 part
Nitric acid	½ part

All water should be kept from this strip. The work is placed in the strip and left there until it is removed. The length of time will depend upon the thickness of the nickel deposit. The surface of the brass will be very little attacked by this mixture of acids.—Problem 5,395.

Stripping Silver

Q.—We have been informed about a cold strip solution for stripping old silver from silverware. The information received was sulphuric acid and salt petre, but we do not know what quantity to use. Please advise us.

A.—A sulfuric acid and nitric acid mixture is generally used to strip silver instead of sulfuric acid and salt petre.

Use 5 parts of sulfuric acid and 1 part of nitric acid. This strip works slowly and the base metal is but very little attacked. If the crock that contains the strip is placed in a tank and surrounded with hot water to heat the strip, it will work much faster.—Problem 5,396.

Patents

A Review of Current United States Patents of Interest

Printed copies of patents can be obtained for 10 cents each from the Commissioner of Patents, Washington, D. C.

1,980,282. November 13, 1934. **Method of Protecting Magnesium and High Grade Magnesium Alloys from the Action of Corroding Agents.** Josef Martin Michel, Bitterfeld, Germany, assignor, by mesne assignments, to Magnesium Development Corporation, a corporation of Delaware.

1,980,333. November 13, 1934. **Pressure Die-Casting Machine with Device for Uniformly Controlling the Movable Parts by Means of Gaseous and Hydraulic Pressure Media.** Paul Haessler, Nuremberg, Germany.

1,980,378. November 13, 1934. **Method of Making Beryllium and Light Alloys Thereof.** Louis Burgess, New York, N. Y.

1,980,518. November 13, 1934. **Material for Coating Metal.** James H. Gravell, Elkins Park, Pa., assignor to American Chemical Paint Company, Ambler, Pa.

1,980,801. November 13, 1934. **Alloy.** Henry Edwin Holbrook, Irvington, N. J., assignor to The H. A. Wilson Company, Newark, N. J.

1,980,890. November 13, 1934. **Ready-to-Solder Wire.** George Tompkins, Wollaston, Mass., assignor of one-half to Burt M. McConnell, New York.

1,980,927. November 13, 1934. **Bonding Composition of Solder and Flux and Art of Making the Same.** Arthur L. Parker, Cleveland, Ohio.

1,981,045. November 20, 1934. **Method and Apparatus for the Extrusion of Lead and Other Metals.** Harry Hill, Kent, England, assignor to Callender's Cable and Construction Company, Limited, London, England, a British Company.

1,981,068. November 20, 1934. **Solution Purification.** Oliver C. Ralston and Fay H. Miller, Clarkdale, Ariz, assignors to United Verde Copper Company, a corporation of Delaware.

1,981,380. November 20, 1934. **Automatic Die-Casting Apparatus.** Karl Friedrich Wagner, Stuttgart, Germany, assignor, by mesne assignments, to Magnesium Development Corporation, Newark, N. J.

1,981,381. November 20, 1934. **Means for Assuring the Safe Working of Automatic Pressure Die-Casting Apparatus.** Karl Friedrich Wagner, Stuttgart Germany, assignor, by mesne assignments, to Magnesium Development Corporation, Newark, N. J.

1,981,629. November 20, 1934. **Method and Apparatus for Inductive Heating.** Edwin Fitch Northrup, Princeton, N. J., assignor to Ajax Electrothermic Corporation, a corporation of New Jersey.

1,981,630. November 20, 1934. **Method of Heating Travelling Stock.** Edwin Fitch Northrup, Princeton, N. J., assignor to Ajax Electrothermic Corporation, Ajax Park, Ewing Township, N. J.

1,981,631. November 20, 1934. **Electric Induction Furnace.** Edwin Fitch Northrup, Princeton, N. J., assignor to Ajax Electrothermic Corporation, Ajax Park, Ewing Township, N. J.

1,981,632. November 20, 1934. **Heating Apparatus.** Edwin Fitch Northrup, Princeton, N. J., assignor to Ajax Electrothermic Corporation, Ajax Park, Ewing Township, N. J.

1,981,715. November 20, 1934. **Electrodeposition of Metals.** Ralph Hall Atkinson, Acton, England, assignor to The International Nickel Company, Inc., New York, N. Y.

1,981,718. November 20, 1934. **Process for the Hardening or Tempering of Copper.** John Vid Chicon, Ambridge, Pa.

1,981,798. November 20, 1934. **Composition of Matter for Treating Aluminum Alloys.** Walter Bonsack, Cleveland, Ohio, assignor to The National Smelting Company, Cleveland, Ohio.

1,981,820. November 20, 1934. **Process of Electrodepositing Rhodium, Bath and Method of Preparing the Same.** Fritz Zimmermann, Newark, and Herbert E. Zschiegner, Woodbridge, N. J., assignors to Baker & Co., Inc., Newark, N. J.

1,981,888. November 27, 1934. **Die-Casting Apparatus.** Anton F. Waltz, Flushing, N. Y., assignor to Edgar N. Dollin, Malba, N. Y.

1,981,927. November 27, 1934. **Bearing Metal Alloy.** Alfred W. Schluchter, Dearborn, Mich., assignor, by mesne assignments, to General Motors Corporation, Detroit, Mich.

1,982,009. November 27, 1934. **Means for Electroplating the Interior Surfaces of Hollow Articles.** Paul E. McKinney, Bethlehem, Pa., and Harry Le Laurin, Washington, D. C.

1,982,423. November 27, 1934. **Mold and Method of Casting.** Everett G. Fahlman, Cleveland, Ohio, assignor to The Permold Company, Cleveland, Ohio.

1,982,424. November 27, 1934. **Mold and Method of Casting Metal.** Everett G. Fahlman, Cleveland, Ohio, assignor to The Permold Company, Cleveland, Ohio.

1,982,563. November 27, 1934. **Method of Plating Iron With Aluminum and Product Thereof.** Anton Wimmer, Dortmund, Germany.

1,982,571. November 27, 1934. **Method of and Apparatus for Rolling Metal.** Walter R. Clark, Bridgeport, Conn.

1,982,587. November 27, 1934. **Electrolytic Foil.** Richard A. Wilkins, Beverly, Mass., assignor to Industrial Development Corporation, Salem, Mass.

1,982,645. December 4, 1934. **Alloy.** John H. Derby, Scarsdale, N. Y.

1,983,205. December 4, 1934. **Stainless Copper Base Alloy.** Richard A. Wilkins, Rome, N. Y., assignor to Revere Copper and Brass Incorporated, Rome, N. Y.

1,983,401. December 4, 1934. **Silverware Burnishing Machine.** Henry Robinson, Lindenhurst, N. Y.

1,983,544. December 11, 1934. **Arrangement for Supply of Current to Electrothermic Melting Furnaces.** Hildor Ingelsrud, Oslo, Norway, assignor to Det Norske Aktieselskab for Elektrokemisk Industri, Oslo, Norway.

1,983,558. December 11, 1934. **Method of Molding or Die Casting Predetermmined Articles of Manufacture.** Louis H. Morin and Davis Marinsky, New York, N. Y., assignors to Whitehall Patents Corporation, New York.

1,983,578. December 11, 1934. **Metal Transfer.** Edward M. Chandler, Alcoa, Tenn., assignor to Aluminum Company of America, Pittsburgh, Pa.

1,983,579. December 11, 1934. **Metal Transfer System.** William T. Ennor and William E. King, Massena, N. Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

1,983,580. December 11, 1934. **Metal Transfer Device.** Joseph A. Nock, Jr., Tarentum, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

1,983,581. December 11, 1934. **Pouring Jacket for Molds.** Horace R. Street, Cleveland, Ohio.

1,983,785. December 11, 1934. **Electrolytic Apparatus.** Richard A. Wilkins, Beverly, Mass., assignor to Industrial Development Corporation, Boston, Mass.

1,983,975. December 11, 1934. **Magnesium Base Alloy.** John A. Gann, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

1,984,151. December 11, 1934. **Alloy.** Roy E. Paine, Cleveland, Ohio, assignor, by mesne assignments, to Magnesium Development Corporation, a corporation of Delaware.

1,984,152. December 11, 1934. **Alloy.** Roy E. Paine, Cleveland, Ohio, assignor, by mesne assignments, to Magnesium Development Corporation, a corporation of Delaware.

1,984,189. December 11, 1934. **Automatic Die Casting Machine.** Hugo Hoffmann, New York, and Max Luedtke, Weehawken, N. J.

1,984,203. December 11, 1934. **Hard Metallic Composition and Contacts Thereof.** George N. Sieger, Indianapolis, Ind., assignor to P. R. Mallory & Co., Incorporated, Indianapolis, Ind.

1,984,225. December 11, 1934. **Age Hardening Silver of Sterling or Higher Standard.** James C. McFarland, Fort Thomas, Ky., assignor to The Wadsworth Watch Case Company, Incorporated, Dayton, Ky.

Equipment

New and Useful Devices, Metals, Machinery and Supplies

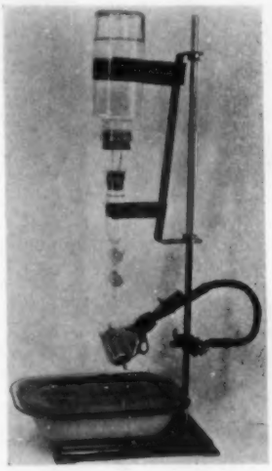
Thickness Tester for Zinc and Cadmium Deposits

The increasing demand among manufacturers and consumers of electroplated articles for a specified thickness of deposit has led to the investigation of methods for measuring the thickness of plated coatings.

The Plating Products Company, 352 Mulberry Street, Newark, N. J., is introducing an apparatus for determining the thickness of cadmium and zinc coatings.

The new apparatus is called the "Chemicrometer" (Chemical Micrometer) to indicate that it measures thickness by chemical means. It makes use of the dropping method as improved and modified by Hull & Strausser (**Metal Industry,** April, 1935, page 133). The dropping method consists in allowing a standard corrosive solution to fall upon the plated article at a rate of 100 drops per minute. The length of time required for the deposit to be penetrated by the solution is a measure of the thickness. The piece is not destroyed by the test and need only be returned for refinishing.

The "Chemicrometer" is so designed that when the rate of 100 drops per minute is once regulated no further adjustment is needed. This feature is time saving and means that the majority of zinc and cadmium plates can be tested in one minute or less. A clamp on a flexible support is provided in order to hold the piece under test in any position beneath the dropping solution. The set is shipped with one pint of test solution and full instructions for its operation.



Chemicrometer, for Measuring thickness of Zinc and Cadmium Plate.

Hard Non-Corrosive Castings

A new development in corrosion-resistant castings has been announced by the Bayonne, N. J., Foundry of The International Nickel Company. This is the production of a new material to meet special purposes.

Known as S Monel, this material is somewhat similar in analysis to regular Monel Metal, the essential difference being in silicon content, which is raised to a maximum of 3.75 per cent. In properties it has a higher hardness than the regular grade of Monel Metal and greater resistance to wear and erosion, particularly steam erosion. Of outstanding importance is the fact that it is non-galling, especially at high temperatures. This cast material can be machined without difficulty if the hardness is held to 325 Brinell by limiting the silicon to 3%. The harder grades must be softened for machining and later re-hardened by heat treatment. Its unique physical properties are indicated by the following:

Tensile Strength (P. S. I.), 100,000-120,000; Yield Point (P. S. I.), 90,-000-100,000; Elongation in 2 Inches, 2%-5%; Reduction of Area, 2%-5%; Brinell Hardness, 275-350.

Another grade of Monel Metal, developed coincidentally, has an intermediate hardness of about 225 to 250 Brinell. Its chief advantage is a higher ductility than S though it is not as outstanding in anti-galling qualities. Its silicon content is approximately 2.50 per cent.

Latest Products

Each month the new products or services announced by companies in the metal and finishing equipment, supply and allied lines will be given brief mention here. More extended notices may appear later on any or all of these. In the meantime, complete data can be obtained from the companies mentioned.

New Taylor Intermitter. A simplified time cycle controller for the automatic, intermittent operation of diaphragm valves or other diaphragm-operated devices. Taylor Instrument Companies, Rochester, N. Y.

Goodrich Vulcalock Valves. A rubber-lined valve for handling corrosive and abrasive fluids under fairly high pressure, pulsating pressure, throttling or suction. B. F. Goodrich Company, Akron, Ohio.

Clear, Acid Resisting Frit. For use over colored porcelain enameled products. O. Hommel Company, 209 Fourth Avenue, Pittsburgh, Pa.

Coveral. A "blanket" for aluminum castings in sand or dies to prevent gas attacking the metal, oxidation, facilitate removal of dirt, etc. Foundry Services, Inc., 107 E. 41st Street, New York City.

Aluminum Degaser. For removing gases, preventing pin holes, etc., in aluminum alloy castings. Foundry Services, Inc., 107 E. 41st Street, New York City.

Motor Driven Bench Grinder. 1/3 H. P., double-end, 7" by ¾" wheel. Hisey-Wolf Machine Company, Cincinnati, Ohio.

Instrument for Measuring the Specific Gravity and Viscosity of Milled Enamel and Other Liquids. O. Hommel Company, 209 4th Avenue, Pittsburgh, Pa.

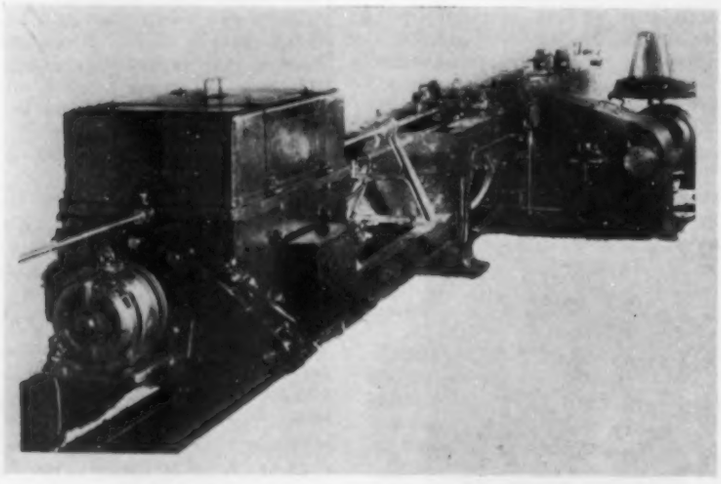
Measuring the Expansion of Metals. A dilatometer which measures and records in ten-thousandths of an inch, expansion and contraction of metals as they are heated and cooled. General Electric Company, Schenectady, N. Y.

Waterproof Emulsion Wax. For office and factory floor upkeep. Franklin Research Company, Philadelphia, Pa.

Wodack "Do-All" Combination Electric Hammer and Drill. Can also be used as a portable grinder and buffer. Wodack Electric Tool Corporation, 4627 W. Huron Street, Chicago, Ill.

Straightening and Polishing Wire Rods

A new, patented combination machine, for the manufacture of drill rods, screw machine rods, brass and alloy metal rods of ⅛-1 in., diameter, has been brought out by the engineering firm of "Schumag," Aachen, Germany, and is offered by W. A. Schuyler, Fisk Building, New York. Brass coils coming directly from the extrusion press, are converted by this machine in a single operation and with one operator, into straight and polished rods.



Polisher and Straightener for Wire Rods

The machine does preliminary straightening of the coil material, drawing or reducing to size, cutting to length, and straightening and reeling or polishing. The entire process is automatic, and the material flows through the machine continuously.

The makers of the machine claim that it offers great economies in the manufacture of rods, and that the finished rods are perfectly straight and highly polished. Also, because the material moves uninterruptedly forward in a straight line, no disturbing inside stresses or knots occur in the rod. The grippers, which pull the material through the adjustable die, do not leave any marks on the surface of the rod.

The straightening and polishing unit can be furnished separately, when it is used for straightening and polishing precut rods or tubes of any length. The rod or tube, which is pushed into the machine, rotates rapidly between two pairs of polishing discs and at the same time gets straightened by passing through three offset bushings mounted on ball bearings. When the rod or tube leaves the machine, it is perfectly straight and highly polished. The separate straightening and polishing machine has different rates of speed and, therefore, different polishes are obtained. It is claimed that the polishing operation improves the surface of the rod and eliminates irregularities, without changing the diameter of the rod. The machine is furnished in three sizes for handling 1/16" to 1¼" diameter rods or tubes.

Fast Cutting Compound

The Lea Manufacturing Company, Waterbury, Conn., announces the development of a new Grade "L" Lea Compound (a patented greaseless compound) to meet the requests for a fast-cutting Lea Compound containing a coarse, sharp abrasive. Grade "L" Lea Compound is greaseless and used for replacing set up wheels in the fine numbers and for fast cutting-down previous to buffing or coloring.

It took considerable time to develop this new compound because of the great difficulty encountered in making the very coarse, sharp abrasive adhere properly to the wheel and give efficient service. This difficulty was overcome by the development of a new binder.

Ball Bearing Buffers

The Baldor Electric Company, 4351 Duncan Avenue, St. Louis, Mo., announces the development of a line of ball bearing buffers, both bench and pedestal type, in sizes ranging from 1/3 H. P. to 5 H. P. The features claimed for this new line are as follows:

Large ball bearings, totally closed.
Extended end bells.
Long distance between wheel centers.
Heavy shaft.
Freedom from vibration.

Book Notes

Lithium. Theoretical Studies and Practical Applications. By Dr. Hans Osborg. Published by the Electrochemical Society, Columbia University, New York. Size 6 x 9; 68 pages. Price $1.10.

Transactions of the Iron and Steel Division, American Institute of Mining and Metallurgical Engineers, 1934. Volume 113. Published by the A. I. M. E., 29 W. 39th Street, New York City. Size 6 x 9; 299 pages. Price $5.00.

Manual for Foremanship Development. Published by Industrial Relations Department, Westinghouse Electric and Manufacturing Company, E. Pittsburgh, Pa. Paper bound, 60 pages, process printed. Price $1.00.

Proceedings of the 37th Annual Meeting of the American Society for Testing Materials, held at Atlantic City, June 25-29, 1934; in two parts. Part 1 comprises the reports of the standing committees together with new and revised tentative specifications and tests. Part 2 includes technical papers. Size 6 x 9. Total pages in both parts 2,260. Price $5.50 per Part in stiff paper cover, $6.00 in cloth, $7.00 in half leather.

Techno Dictionary. German-English-Italian; English-German-Italian; Italian-German-English. Published by Hubert Hermanns, Berlin, Germany, N. W. 40, Roonstrasse 10. Price 15 shillings.

Metal Statistics, 1935 edition. Published by American Metal Market. Size 4 x 6; 560 pages. Price $2.00.

Mechanical World Year Book, 1935 edition. Published by Emmott & Company, Ltd., 31 King Street, W., Manchester, England. Size 4 x 6; 360 pages. Price 1s. 6d.

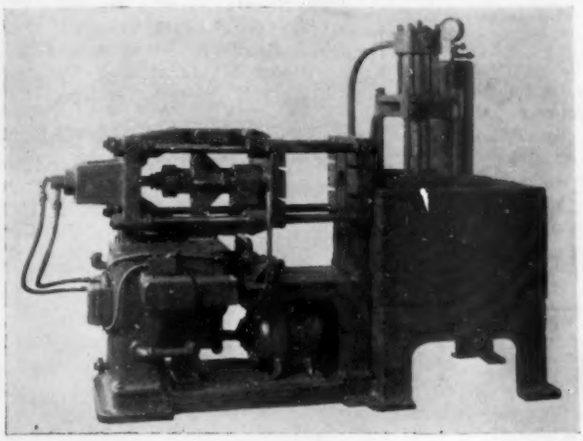
Standards on Refractory Materials. Published by American Society for Testing Materials, 260 S. Broad Street, Philadelphia, Pa. Size 6 x 9; 143 pages. Price $1.00.

Journal of the Institute of Metals (British). Published by Institute of Metals, 36 Victoria Street, Westminster, S. W. 1, England. Size 5 x 8; 304 pages. Price L1 11s. 6d. plus 9d. postage. A record in full of the papers presented at the Manchester autumn meeting held in 1934.

The Chemical Formulary. Volume 2. Edited by H. Bennett. Published by D. Van Nostrand Company. Size 5½ x 8½; 570 pages. Price $6.00. A companion book to Volume 1, published in 1934, giving formulas, recipes, etc., in the field of the chemical industry.

Hydraulic High Speed Die Casting Machine

The illustration below is of the new die casting machine, No. H-HP-1, just announced by the Lester Engineering Company, 278 Rockefeller Building, Cleveland, Ohio. It is the culmination of ten years of experience with hydraulic, semi-hydraulic, automatic and manually controlled die casting equipment. It is fully hydraulic and self-contained, eliminating the necessity of a compressed air source for metal injecting. The pressure is created hydraulically for metal injection into the die.



High Speed Die Casting Machine

High speed is obtained by means of a fast moving hydraulic toggle mechanism for die movement. This device is positive acting, developing a safe locking pressure of 35 tons. This power can be utilized in pulling large cores. In conjunction with this die operating mechanism, is an automatic plunger control which eliminates all lost time between the various phases of the cycle of operation.

Since the metal to be cast is injected into the die by the solid displacement method, the quality of the finished part, in respect to solidity and surface finish, is said to be the best obtainable. Wear between the plunger and metal cylinder is said to be automatically taken up and metal pressure always maintained. Automatic plunger control eliminates the human element and, it is claimed, uniformity of output. Dies can be changed in a very few minutes, there being only one adjustment necessary.

The operation of the No. H-HP-1 machine is controlled by a single lever. Pulling the lever out will close the die hydraulically. As soon as the die is completely closed and locked, the plunger will operate, forcing the metal into the die. The plunger will remain down holding pressure on the metal, for as long a period of time as required for the particular part being cast. There is an easily accessible adjustment which makes it possible to vary this time delay accurately. The plunger will then return to its original position and by pushing the operating lever back, the dies will again be opened.

The following are the specifications of the No. H-HP-1 machine:

Die opens	5 inches
Max. Die Height	12 "
Min. Die Height	4 "
Clearance between bars	12 x 10"
Metal Pot capacity (Zinc)	300 lbs.
Locking pressure on die	35 tons
Machine weight	3,900 lbs.
Plunger capacity (Zinc)	5 lbs.
Max. Speed (Oper. per hr.)	600

Atomizer for Burns

Small burns on the hands and arms are common occurrences around a plant or factory where heat is used in production—and that means the large majority. The chances are that such a burn will, after smarting for a few days, heal uneventfully, but serious infection may occur with resultant hospitalization costs, decreased efficiency, and other disturbances. Bad burns must, of course, be cared for immediately.

In order to facilitate prompt and effective treatment of burns, The DeVilbiss Company, Toledo, Ohio, has developed a special atomizer for applying tannic acid, a burn remedy recognized by industrial medical authorities.

This atomizer is said to offer particular speed and convenience in first-aid work by the incorporation of three special features:

(1) A wide mouthed bottle to facilitate filling, stirring, and cleaning.

(2) Acid and water levels clearly marked on the bottle to make correct mixing easy.

(3) A wide volume of soft spray giving quick and effective application over a wide area.

Atomizer for Burns

Catalogs

Abrasive Discs. A complete line covering all types of abrasives, bonds, solid and segmental type, in a wide range of sizes to suit all common makes of disc grinders. Norton Company, Worcester, Mass. (363)

Polyphase Motors. 1/6 to 600 H. P. Century Electric Company, 1806 Pine Street, St. Louis, Mo. (364)

The Verdict of Public Opinion on the Case of the Public Interest vs. the Abuses of Patent Pool Monopolies. American Economic Foundation, 20 Exchange Place, New York. (365)

Save time. Use the coupon below to get any of the above catalogs or bulletins, or for data on any subject not mentioned this month. METAL INDUSTRY will see that you get them promptly.

METAL INDUSTRY
116 John Street, New York.

(Insert below the number in parentheses at end of each item desired.)

I wish to receive the following catalogs mentioned in June, 1935

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.....

Name .....Address .....

Houghto-Clean. A brief outline describing the use of the Houghto-Clean series of cleaning materials for metal working plants. E. F. Houghton and Company, Philadelphia, Pa. (366)

"This New Industrial Pick-Up." A discussion of material handling problems and methods of their solution in industrial plants. An explanation of the pallet system of handling loads on low, flat slatted wooden trays or pallets. The Elwell-Parker Electric Company, Cleveland, Ohio. (367)

Standard Appliances for Anti-Friction Bearing Mountings. Bearing Appliance Company, Ardmore, Pa. (368)

Spra Bonderite for Holding Paint to Steel. A new method of applying Bonderite. Parker Rust Proof Company, Detroit, Mich. (369)

Modern Polishing. Revised edition of a booklet containing much new information of value to heads of polishing departments. General Abrasive Company, 3404 Hyde Park Blvd., Niagara Falls, N. Y. (370)

Save with Skilsaw. Portable power saws for metals and other materials. Skilsaw, Inc., 3310 Elston Avenue, Chicago, Ill. (371)

Barnstead Solvent Recovery Stills. For recovering solvents that have been used as thinners for cleaning metal parts, equipment, spray guns, etc., and for recovering solvents used in other industrial processes. Barnstead Still and Sterilizer Company, 56 Lanesville Terrace, Forest Hills, Boston, Mass. (372)

Electrotinning with the Dupont Sodium Stannate-Acetate Bath. A manual which summarizes this process, describes plating solution control and maintenance, preparation of the base metal, analytical methods, etc. R. & H. Chemicals Department, E. I. DuPont de Nemours and Company, Inc., Wilmington, Dela. (373)

Spray Nozzle Bulletin No. 50. Contains spray nozzle data, selection charts for principal applications in the industrial field. Binks Manufacturing Company, 3114-40 Carroll Avenue, Chicago, Ill. (374)

Hull and Strausser Test for Determining the Thickness of Cadmium and Zinc Electrodeposits. Cadalyte Service Bulletin, Volume 3, No. 1, May, 1935. Grasselli Chemical Company, Inc., Cleveland, Ohio. (375)

Associations and Societies

American Foundrymen's Association

222 W. Adams Street, Chicago, Ill.

At the coming annual convention to be held in Toronto, August 20-23, 1935, visiting foundrymen will have an opportunity to see the Canadian National Exhibition, which is said to be the world's largest annual exposition. Special features will be provided for these visitors on the afternoon and evening of Friday, August 23.

Foundrymen are urged to attend this convention for which preparations are rapidly being completed, under the leadership of **Major L. L. Anthes** of the Anthes Foundry Company, Ltd., Toronto, who is chairman of the General Committee.

American Society for Testing Materials

Headquarters, 260 South Broad Street, Philadelphia, Pa.

The 38th annual meeting of the American Society for Testing Materials will be held in Detroit, June 24-28 at the Book-Cadillac Hotel. This meeting will be full of interest not only because of the special features, but also because of the importance of the Committee reports and the papers to be presented.

The Tenth Annual Edgar Marburg Lecture will be delivered by **Dr. L. B. Tuckerman** of the National Bureau of Standards, Washington, D. C., on the subject of "Aircraft: Materials and Handling."

An interesting exhibit of new laboratory apparatus and supplies will feature the meeting. The exhibits will include universal testing machines, balancing equipment, impact machines, hardness testers, ductility testers, thermometers, hydrometers, laboratory ovens, strain measuring instruments and recording instruments.

Nominations for Officers

The following nominations for officers have been announced.

For President:

H. S. Vassar, Laboratory Engineer, Public Service Electric and Gas Company, Irvington, N. J.

For Vice President:

A. E. White, Professor of Metallurgical Engineering and Director of Department of Engineering Research, University of Michigan, Ann Arbor, Mich.

For members of Executive Committee:

W. H. Graves, Chief Metallurgist, Packard Motor Car Company, Detroit, Mich.

R. L. Hallett, Chemist, National Lead Company, Brooklyn, N. Y.

N. L. Mochel, Metallurgical Engineer, Westinghouse Electric and Manufacturing Company, Lester Station, Philadelphia, Pa.

H. H. Morgan, Manager, Rail and Fastenings Department, Robert W. Hunt Company, Chicago, Ill.

W. R. Webster, Chairman of the Board, Bridgeport Brass Company, Bridgeport, Conn.

Papers and Reports

Among the papers and reports of interest to the non-ferrous metal industries will be the following:

Report of Committee E-10 on Standards. T. R. Lawson, chairman.

Report of Committee E-9 on Research. P. H. Bates, chairman.

Report of Committee E-1 on Methods of Testing. W. H. Fulweiler, chairman.

The Hardness Testing of Light Metals and Alloys. R. L. Templin.

A New Method and Machine for Dynamic Hardness Testing with a Discussion of Its Accuracy and Advantages. W. M. Patterson.

Informal Discussion on the Significance of "Yield Strength" of Metals in Design and Specifications.

Report of Sectional Committee on Specifications for Zinc Coating of Iron and Steel. J. A. Capp, chairman.

Report of Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys. T. S. Fuller, chairman.

Report of Committee D-14 on Screen Wire Cloth. J. R. Freeman, Jr., acting secretary.

Corrosion Testing Methods. H. E. Searles and F. L. LaQue.

Report of Joint Research Committee of A. S. M. E. and A. S. T. M. on Effect of Temperature on the Properties of Metals. H. J. French, chairman.

Some Tests on Tin Bronzes at Elevated Temperatures. J. W. Bolton.

Creep Characteristics of Aluminum Alloys. R. R. Kennedy.

Report of Research Committee on Fatigue of Metals. H. F. Moore.

The Rotating-Arc Fatigue Machine for Testing Small Diameter Wire. J. N. Kenyon.

High Speed Fatigue Tests of Several Ferrous and Non-Ferrous Metals at Low Temperatures. W. D. Boone and H. B. Wishart.

Symposium on Spectrographic Analysis.

The Use of the Spectrograph in the Platinum Industry. H. E. Stauss.

Quantitative Spectrographic Analysis of Magnesium Alloys for Manganese and Silicon. J. S. Owens.

The Spectrographic Determination of Impurities in Commercial Cadmium. F. W. Lamb.

Report of Committee E-2 on Spectrographic Analysis. H. V. Churchill.

Report of Committee B-1 on Copper Wire. J. A. Capp, chairman.

Report of Committee B-4 on Electrical Heating, Electrical Resistance and Electric Furnace Alloys. Dean Harvey, chairman.

Report of Committee B-5 on Copper and Copper Alloys, Cast and Wrought. C. H. Mathewson, chairman.

Report of Committee E-4 on Metallography. C. H. Davis, chairman.

Report of Committee B-7 on Light Metals and Alloys, Cast and Wrought. Sam Tour, chairman.

Report of Committee B-6 on Die Cast Metals and Alloys. J. R. Townsend.

Report of Committee B-2 on Non-Ferrous Metals and Alloys. R. F. Mehl.

A Survey of Testing in the Precious Alloy Field with Special Reference to Testing Requirements for Duplex Alloys. T. A. Wright.

Making and Testing Single Crystals of Lead. B. B. Betty.

Personals

Evarts C. Stevens

Evarts C. Stevens was elected president of the International Silver Company, Meriden, Conn., at a meeting of the board of directors of that company on April 24th. Mr. Stevens had been vice-president since April, 1929 and succeeded the late Clifford R. Gardinor. (See **Metal Industry,** May, 1935, p. 185).

Mr. Stevens was born in Wallingford,

EVARTS C. STEVENS

Conn., in 1885. His father, E. Seneca Stevens and his grandfather, David S. Stevens, had been associated all their lives with the flatware business, being manufacturers of spoons. Consequently, the new president of the International Silver Company has had a lifetime of preparation for his post. He was educated in the public and private schools of Wallingford, Glastonbury and New Haven, and in the New Haven High School. He spent a few years with N. T. Bushnell Company, New Haven, and in 1906 he started in Factory P of the International Silver Company in Wallingford as assistant to his father who was the superintendent. In 1919 he was appointed manager of the Simpson Nickel Company plant (Factory M) and remained there until September, 1928. At that time he was appointed Chairman of the Flatware Committee and Flatware Manager of the Company. Having already been made a director, in April, 1929 he was elected Vice-President and a Member of the Executive Committee. Mr. Stevens' experience, therefore, has covered practically every department of the business.

Mr. Stevens is a director of Manning, Bowman and Company, vice-president of the Dime Savings Bank of Wallingford, a director in the Home National Bank at Meriden; he was secretary of the Wallingford Board of Education, from 1917 to 1929, and Secretary of the Board of Water Commissioners from 1924 to 1928. He holds many offices in trade organizations, such as Chairman of the Open Shop Conference of Connecticut, Director of the Manufacturers' Association of Connecticut, and he is also a member of the Executive Board of the Southern Connecticut Branch of the National Metal Trades Association.

Mr. Stevens has two sons, one of whom, Evarts C. Stevens, Jr. is with the International Silver Company in the New York office.

Albert O. Plambeck, formerly connected with Sherwin-Williams Company and more recently with Ault & Wiborg Company of Canada, has been appointed Assistant Technical Director of Roxalin Flexible Lacquer Company, Elizabeth, N. J. He will be first assistant to Mr. Leo Room, Technical Director and President of the company.

Roy C. Wilcox, secretary of the International Silver Company has been elected to the post of Executive Vice-President, also. **Craig D. Munson** has been elected vice-president of the Company, and **Horace C. Wilcox** has been made a member of the Executive Board.

Vernon H. Schnee has been appointed to the staff of the Battelle Memorial Institute, Columbus, Ohio. Mr. Schnee is a graduate of Cornell and has had wide commercial experience in the development and industrial application of inhibitors and non-ferrous alloys.

New appointments have been announced in the Merchandising Division of the **Westinghouse Electric and Manufacturing Company,** Mansfield, Ohio. **E. M. Olin** has been made assistant to the vice-president; **C. A. Van Derau,** manager of manufacturing, **W. C. Beattie,** assistant manager of manufacturing in charge of production, and **J. W. McNair,** assistant to manager of manufacturing.

Obituaries

Thomas A. Weiss

Thomas A. Weiss, electroplater and silversmith of 36 W. 47th Street, New York City, died of heart failure in his shop early in May. Mr. Weiss was 60 years old.

Mr. Weiss had been in business for over 28 years, and was one of the best known platers in the Metropolitan District in silver, gold and rhodium on jewelry, silverware, flatware and similar products. The firm had also gone extensively into galvanoplastic work.

Mr. Weiss was known to the entire trade as a kindly, considerate and eminently fair competitor. He was known to his customers as an honest, straightforward fair-dealing business man with high standards of quality in his work, and high standards of rectitude. He was a genial, lovable character, who will be sadly missed.

The firm of Thomas A. Weiss will continue under the management of his brother, Michael Weiss.

Sidney K. Becker

Sidney Kent Becker, works manager of the Fairfield plant of the United States Aluminum Company, a subsidiary of the Aluminum Company of America, died in the Bridgeport Hospital, Bridgeport, Conn., May 14, at the age of 51.

Mr. Becker came to Bridgeport 25 years ago, a graduate of the Heathcote School, Buffalo, and Harvard University. His first connection with the aluminum company was in 1910 as eastern sales manager. He had been works manager of the Fairfield plant for 15 years at the time of his death.

Mr. Becker was a director of the Fairfield Trust Company and a member of the Fairfield Federal Emergency Relief Administration. He was active in community and church work and was a member of a number of clubs. He leaves a widow, Mrs. Natalie Hawley Becker, and a son, Sidney K. Becker, Jr.

Henry F. Wanning

Henry F. Wanning, director and member of the executive committee of the Farrel-Birmingham Company, Inc., Ansonia, Conn., died at his home in Shelton, Conn., on Sunday, April 28th. Mr. Wanning was one of the leading figures in Connecticut industry. He started as a bookkeeper with the old Birmingham Iron Foundry, rising to the post of president. In 1927, when the merger occurred of his company with the Farrel Foundry & Machine Company, Mr. Wanning was made a director and a member of the executive committee of the board of directors in the new corporation, Farrel-Birmingham Company.

William H. Moulds

William H. Moulds, 61, owner of the Moulds Brass Foundry, Benton Harbor, Mich., died recently. Mr. Moulds was born in Iron Ridge, Wis., in 1873 and had been connected with the foundry business for the past 37 years.

Industrial and Financial News

News of the Codes

The NRA has announced recognition of the following members of Code Authorities:

Die Casting Manufacturing Industry: F. P. Assmann, Precision Casting Company, Inc., Syracuse, N. Y.; **H. H. Doehler Die Casting Company,** Toledo, Ohio; **G. M. Rollason,** Aluminum Company of America, Garwood, N. J.; **H. H. Wiss,** Superior Die Casting Company, Cleveland; and **S. A. Hellings,** Stewart Die Casting Corporation, Chicago.

Non-Ferrous Hot Water Tank Manufacturing Industry: T. W. Dahlquist, South Boston, Mass.; **M. H. Feldman,** Conshohocken, Pa.; **T. M. Bohen,** New York, N. Y.; **H. W. Coombs,** Boston, Mass.; and **A. Cooper,** South Boston, Mass.

Electro Plating and Metal Polishing and Metal Finishing Industry: Committee for District No. VI—**A. R. Tonon,** Rust Proofing Company, Cambridge, Mass.; **A. N. Garrepy,** Worcester, Mass.; **Thomas J. Murray,** Springfield, Mass.; **F. F. Sahen,** National Sherardizing Company, Hartford, Conn.; and **H. B. Wilson,** Plainville Electric Plating Company, Plainville, Conn.

Charles E. Wade will serve as administration member of the Supplementary Code Authority without vote, until further order.

Buff and Polishing Wheel Industry: L. W. MacFarland, Long Island City, N. Y.; **C. J. Cahill,** Chicago, Ill.; **Warren L. Neu,** Matawan, N. J.; **J. L. McCormick,** Elwood, Ind.

Shepard Barnes will serve as administration member, without vote, until further order.

Metal Developments

New processes for sterilizing foods in silver plated vessels were described by **Dr. F. E. Carter** of **Baker and Company,** Newark, N. J., at a recent meeting of the American Institute of Mechanical Engineers in Wilmington, Dela. Dr. Carter pointed out that gold, platinum and silver are being used in increasing amounts in the manufacture of machinery in the chemical industry because of their durability and chemical properties.

Seven bronze traffic towers which formerly stood in the center of Fifth Avenue at various crossings, were sold at auction on May 7th by the Police Department. They had been declared obsolete as the position in which they were placed was found to interfere with traffic. The towers with marble bases and inset clocks cost $125,000, and had been presented to the city by the Fifth Avenue Association. We have no information about the price at which they were sold but we would hazard a guess that if they brought 125,000 cents, the city was doing well.

Purchasing Agents Exhibition

The 20th Annual International Convention of the National Association of Purchasing Agents was held in New York, May 20-23 at the Waldorf-Astoria Hotel. In connection with this meeting, an exhibition, called the Inform-A-Show, was held, at which a number of firms exhibited non-ferrous metals and metal products.

American Brass Company, Waterbury, Conn. Anaconda products of copper and copper base alloys in sheet, rod, wire, tube; electrolytic sheet; beryllium copper.

Bridgeport Brass Company, Bridgeport, Conn. Sheet, rod, wire and seamless tubing of copper base alloys; also a variety of manufactured products such as piping, plumbers' brass goods, metal bellows, tire valves, etc.

Chase Brass and Copper Company, Waterbury, Conn. Sheet, rod, wire and tube of copper base alloys and nickel-silver; also fabricated material such as lighting fixtures, screw machine parts, bolts, nuts, etc.

Riverside Metal Company, Riverside, Burlington County, N. J. Sheet, strip and wire rod in phosphor bronze, nickel-silver and beryllium copper.

Scovill Manufacturing Company, Waterbury, Conn. A comprehensive selection of products taken from over 300,000 metal articles which Scovill produces, ranging from sheet, rod, wire and tube to buttons and fasteners.

Seymour Manufacturing Company, Seymour, Conn. Nickel-silver and phosphor bronze in sheet and wire rod.

Thomas Paulson and Son, Inc., 450 Union Street, Brooklyn, N. Y., showed a comprehensive line of non-ferrous castings including articles of aluminum, Everdur, Tempaloy and their bearing metal, Hecla bronze.

Business Items-Verified

Jacob Cohen, smelters and wholesale dealers in metals, have leased for a term of years the entire new building at 245-245½ South Street, New York, running through to 479-481 Water Street.

Benjamin M. and **Harry L. Berinstein,** have organized the **Elmira Vanities, Inc.,** to manufacture metal and enamel novelties on a large scale. **E. S. Irelan,** formerly superintendent of Elgin-American Company, Elgin, Ill., is superintendent and **L. J. Fiske,** formerly with Illinois Watch Case Company is sales manager. The firm is located at Elmira, N. Y. The following departments are operated: tool room, stamping, plating, polishing and lacquering.

Werra Aluminum Corporation, Waukesha, Wisc., has been formed and has taken over the assets of the Werra Aluminum Foundry Company. Officers of the new company are as follows: **B. C. Bugbee,** president; **L. D. Harkrider,** vice-president; **C. E. Nelson, Sr.,** secretary and treasurer; **J. W. Werra,** general manager; **B. Werra,** superintendent and metallurgist; **C. Werra,** technical advisor. This firm operates the following departments: bronze, brass and aluminum foundry; plating, polishing. The company is in existence over 40 years.

J. Schrader Company, 419 High Avenue, S. E., Cleveland, Ohio, manufacturer of lamps, has acquired two-story factory on Fenwick Avenue, 30,000 sq. ft., for a new plant, increasing present capacity. The company will remove to new location in June. This firm operates the following departments: spinning, plating, polishing and lacquering.

Maryland Retinning Company, 237 President Street, Baltimore, Md., plans a one-story addition, 60 x 100 ft., including improvements in present plant. Cost over $25,000 with equipment. This firm operates the following departments: smelting and refining, tinning, soldering.

The **Lea Manufacturing Company,** Waterbury, Conn., manufacturers of buffing and polishing compounds, announces the addition of **Palmer Langdon** to its Research Staff. Mr. Langdon will have charge of an important piece of research work started a year ago by the company in abstracting and indexing all available articles and papers, published or read since 1900, pertaining to buffing and polishing. The Company feels that such work when completed will be invaluable as a reference library to those in the trade producing articles requiring buffing and polishing.

Alcote Incorporated, with offices in the Lafayette Building, Detroit, announces the Alcote Process, a protective and wear resistant surface treatment for

aluminum and its alloys. Officers of the new Michigan corporation are: **Fred A. Wales,** President; **E. B. Wales,** Vice-President; **G. F. Brush,** Sec'y-Treasurer. It is stated that several prominent manufacturers of aluminum alloy pistons have adopted the Alcote Process and that many new uses for these finishes are being developed for other products. Mr. Fred A. Wales was the founder and president of Aluminum Colors, Incorporated, Indianapolis, Indiana, and Detroit, Michigan. This Company was acquired on date of October 1, 1934, by the Aluminum Company of America.

B. H. Berkowitz, president of the **Everware Nickel Plating and Chromium Company, Inc.,** 109 S. 5th Street, Brooklyn, N. Y., gave a banquet to the friends and employees of the company on Saturday, May 11 to celebrate the opening of his new plant at the above address.

Herbert J. Winn, President of Taylor Instrument Companies, Rochester, N. Y., sailed from New York, May 15th, on the Aquitania, bound for London and a five weeks business trip. A major part of his time will be spent at the plant of **Short & Mason, Ltd.,** manufacturing distributors in Great Britain.

The Brown Instrument Company, Philadelphia, Pa., manufacturers of instruments and controls, and the **Minneapolis-Honeywell Regulator Company,** Minneapolis, Minn., manufacturers of control systems and regulators, have opened a joint office at 303—the 101 Marietta Street Building, Atlanta, Georgia, to serve the Southeast. **Wesley R. Moore,** for a number of years District Manager of Brown Instrument Company, is Manager in charge, with **Leon L. Kuempel,** Sales Engineer, **Charles A. Kitzinger,** Service Engineer, and **J. A. Crawley,** Office Manager.

News From Metal Industry Correspondents

New England States

Waterbury, Connecticut

May 24, 1935.

Except in the matter of employment, all indices compiled by the Chamber of Commerce for the month of April indicate better business than a year ago. The employees in all plants having 65 or more persons numbered 28,747, a decrease of 117 from March and 1,334 from April of last year. In the eight largest factories, 15,052 were employed, which is 151 less than in March and 1,394 less than last April. Total bank clearings for the month amounted to $4,760,700, an increase of $315,000 compared with last April, and the bank debits amounted to $26,282,852, an increase of $1,347,796 compared with last April. Bank savings amounted to $43,438,267, an increase of $924,696 compared to last April. There were 948 men employed on FERA projects and 874 employed on Mutual Aid projects, decreases of 31 and 12, respectively, as compared with the previous year.

The **Waterbury Clock Company** and the **Ingersoll-Waterbury Company** have obtained an injunction against the **Waterbury Razor Blade Company** restraining the latter from using its trademarks and such names as "Waterbury," "Ingersoll," and "Junior." The Waterbury Razor Blade Company is located in New York and it was held that use of the names mentioned constituted unfair competition.

The **Connecticut Manufacturing Company** has been organized and has taken part of the Templeton building on Benedict Street where it will manufacture machine screws and other screw machine products. **Charles H. Swenson,** the president and treasurer, was formerly treasurer and manager of the **General Manufacturing Company,** rivet and screw manufacturers. **Emil Johnson,** secretary and manager, also worked many years in that concern.

The reorganization of the **Beardsley & Wolcott Manufacturing Company** is now completed. The RFC loaned $85,000 and **William A. Tobler** of Mt. Carmel, Conn., made an additional loan of $25,000, secured by a second mortgage. He has been elected president and treasurer while **Lyle A. Brown** of Boston, who managed the concern under the receivership, has been elected vice president and general manager. The directors include the above, **T. A. D. Jones** and **Starr Barnum** of New Haven and **Francis T. Phillips** of this city. Stock in the new company will be given holders of the old common and preferred stock. The company has taken an appeal from the valuation placed on its property by the city. The valuation is $31,700 on the land and $210,000 on the buildings. Back taxes to the amount of $40,000 have accrued.

A report filed with the securities commission shows a salary paid **President John A. Coe** of the **American Brass Company** of $39,022.—W. R. B.

Connecticut Notes

May 24, 1935.

BRIDGEPORT—The **Stewart Warner Corporation,** owner of the **Bassick Company** of this place, plans the removal of the **Stewart Die Casting Corporation** to Bridgeport and has abandoned its plan to remove the local concern from this city.

HARTFORD—Value of products turned out in local manufacturing concerns in 1933 was $55,433,279, according to the Bureau of the Census, a decline of 52 per cent from 1929. This decline was 3 per cent less than the decline of the country as a whole. The number of manufacturing establishments fell from 264 to 296 during that period **and** the number of wage earners from 24,744 to 14,906. Wages dropped from $26,020,000 to $14,397,000.

Colt's Patent Firearms Manufacturing Company set May 15 as the deadline for returning strikers. Many returned on that day but those remaining out are maintaining the heaviest picket ever seen in the city. Many college students and employees of other plants are aiding the company's strikers.

BRISTOL—The plant fixtures and machinery of the **American Silver Company** has been sold to the **International Silver Company** and been moved to Meriden. The concern recently closed after five years of receivership. Most of the workers have been absorbed by the parent company, the **Bristol Brass Corporation.**

NEW HAVEN—The **Acme Wire Company** has declared a dividend of 12½ cents a share, payable May 15, to stockholders of record, April 30. The last previous declaration was 25 cents a share, March 14, 1931. Recently the company reduced its par value from $25 to $20 a share. Earnings for 1934 were at the rate of 60 cents a share.

TORRINGTON — The **Torrington Company** in filing its report with the securities commission, did not list salaries paid. The largest stockholders are two directors, **G. B. Alvord** of Hartford, with 26,000 shares, and **E. A. Carter** of Springfield, with 22,000 shares.

NAUGATUCK—The **Eastern Malleable Iron Company** will close its plants in New Britain and Bridgeport, Conn., and Troy, N. Y., concentrating operations here and in Wilmington, Del.

W. R. B.

Providence, R. I.

May 24, 1935.

According to the monthly report of the Brown Bureau of Business Research the manufacturing payrolls in Rhode Island during the month of April were 1.6 per cent larger than in the corresponding month of 1934, but were 3.1 per cent smaller than during March. The total payrolls for April in the State as compiled from payroll withdrawals from banks, amounted to $12,598,359 an increase of 2.2 per cent from April, 1934, but a decrease of 2 per cent from March of this year. The total payrolls of jewelry and silverware manufacturers for April was $806,034 a decrease of 5.5 per cent from the preceding month, but 7.8 per cent increase over April last year. The total of non-ferrous metal manufacturers was $145,998 for April an increase of 5.3 per cent over March and 21.3 per cent over April, 1934.

The Providence Board of Contract

and Supply has awarded to the **Phillips Lead & Supply Company** of this city the contract for 40,000 pounds of pig lead for the Public Works Department. The price was $1,587.

The Warwick Brass Foundry is erecting an addition to its foundry building on Lincoln Avenue, in Warwick.

A charter has been issued to **Lisker & Rossi, Inc.**, of Providence, to manufacture jewelry with an authorized capital of 100 shares of common stock of no par value. The incorporators are: **Maurice W. Handel, Eugene J. Sullivan, Jr.** and **Albert Lisker**, all of Providence.

Silverware manufacturers in Providence and other sections of the New England area are turning toward the manufacture of their products in other metals rather than silver, owing to the increase in the cost of that metal. One of the firms has gotten out a line in bronze, while another is experimenting with stainless steel.

A. E. Waller Company, Inc., of Providence, manufacturers of jewelry findings and novelties, has been incorporated with an authorized capital of 600 shares of common stock of no par value. The incorporators are: **Anthony E. Waller, Anthony C. E. Waller, Ruth M. A. Waller** and **Ida M. Waller**, all of Cranston, R. I.

Henry Abrams has filed a statement of ownership of the **Eastern Gold Purchasing Company**, 33 Broad Street, Pawtucket, with the City Clerk of that city.

The Larson Tool and **Stamping Company** of Attleboro will build an addition containing 3,300 square feet of floor space, to its factory near Olive Street, in that city to house the equipment of the **Boston Pressed Metal Company**, of Worcester, which the Attleboro company has purchased. **C. Wallace Cederberg**, president of the Attleboro concern, anticipates that the company will employ a considerable number of additional hands as soon as the new plant is settled.

W. H. M.

Middle Atlantic States

Utica, N. Y.

May 24, 1935.

Metal trades in Central New York plugged along through April showing a substantial increase over April of 1934 but losing the impetus given in the early months of the year.

In Utica the Industrial Association reported that employment in the metal industries was about 70% of normal but 14% over that of April, 1934.

Representatives of the **Revere Brass & Copper** and **General Cable Corporation** in Rome were not as optimistic as they had been at the first of the year.

Dr. Sidney J. French, assistant professor of chemistry at Colgate University, this month announced the discovery of a new alloy having a melting point of 116° F. It contains bismuth, lead, tin, cadmium and the new metal, indium, which has been commercially developed by **William S. Murray**, member of board of trustees at Colgate.

While the new alloy has not been tried out commercially it may find use in making fingerprint molds, surgical molds and molds of human features.

Utica industries reporting they are exporting include Savage Arms Corporation, Powell Muffler Company, American Emblem Company, Brunner Manufacturing Company, Eureka Mower Company, Hart & Crouse Company, International Heater Company, Utica Cutlery Company, Divine Brothers Company and Utica Drop Forge & Tool Company.—E. K. B.

Newark, N. J.

May 24, 1935.

Newark metal manufacturing plants report a little increase in business during the past few weeks. The **Ideal Plating & Polishing Company**, 57-59 Branford Street, which is licensed by **United Chromium, Inc.**, reports that there has been an upturn in orders. The concern says that orders are now being placed for plating parts for automobiles with other improvement in business, especially from the auto and hardware trade, for which the establishment has been doing considerable work.

Richards Chemical Works, 190 Warren Street, Jersey City, will erect a four-story addition and two-story addition.

Following Newark concerns have been incorporated: **Huteco Manufacturing Company**, metal products, 400 shares, no par; **Beller Electric Company**, electrical equipment, $25,000 first preferred; $35,000 second preferred, 100 shares, no par; **Quattro Laboratories, Inc.**, chemicals, 101 shares, no par; **Acme Metal & Machinery Company**, 100 shares, no par.

C. A. L.

Trenton, N. J.

May 24, 1935.

Ownership of the **Skillman Hardware Manufacturing Company**, Trenton, has been taken over by the **T. C. Wheaton Company**, Millville, N. J., glass manufacturers. The Skillman plant, which has been closed for several weeks, during which time negotiations for the sale were in progress, has been reopened. **Edward F. Sutphin**, general manager announces that the same personnel of 80 employees, will be continued. The company will continue to manufacture hardware.

Following incorporations have been incorporated here: **Thropp Foundry Company**, Trenton, 50 shares, no par; **The Field Lamp Company**, Jersey City, signal devices, 1,000 shares, no par; **New Jersey Iron & Metal Company**, Paterson, metal products, 1,000 shares, no par.

C. A. L.

Middle Western States

Toledo, Ohio

May 24, 1935.

Industrial conditions in this area have not been as favorable during the last few weeks. A strike that threatened at one time to tie up the automobile industry in this area and other sections of the state, slowed up production and caused much anxiety. Sane minds towards the end predominated and the dispute was settled after a fashion. Within the last week confidence has been restored, so far as local conditions are concerned, and it looks now as if Toledo would witness active manufacturing for many weeks to come. There continues, however, that general uncertainty that apparently can not be eliminated until there is more assurance.

The strike in the **Chevrolet Motor Company's** plant here that threatened at one time to make more than 110,000 jobless over a wide range of territory, was settled suddenly at a critical moment, much to the satisfaction of nearly everyone with the exception perhaps of certain radicals who apparently believe in nothing but stubborn opposition. The strike resulted in the closing for a time of 15 General Motors' units and several independent manufacturing plants in different parts of the middle west. Judging from statements made by both sides it appears that the last word in the actual settlement will be heard over the conference table.

F. J. H.

Detroit, Mich.

May 24, 1935.

While industrial conditions in this area still are at a high point, it is apparent that the peak has been reached, for the season at least. This is particularly manifested in the motor car industry. Perhaps the high mark might have been extended a little farther if it had not been for labor difficulties that in some instances almost caused suspension of plant operations.

Labor difficulties have been cleared up for the present, and smoother sailing is expected. But there is considerable uncertainty manifested which, if once cleared away, would make better feeling and restore confidence.

Manufacturers of refrigeration units continue under heavy production. Orders are reported far ahead with no indication of tapering off. This industry seems to recognize no seasons and is just as active in winter as in the summer, at least that is what has been shown for more than a year.

Stove manufacturers are pushing things and some have materially increased their sales. In general, however, production should be much heavier.

The plating industry, naturally, is keeping pace with the automotive demands. Practically all the plants in this area are working to capacity.

James T. Pardee, Cleveland, secretary and vice president of the Dow

Chemical Company, Midland, Mich., has been elected chairman of the board, according to **Willard H. Dow,** president. **Mr. Pardee** succeeds the late **A. E. Convers.**

The **Continental Motors Corporation,** Muskegon, has received two orders totaling $920,000, it is announced, by **W. R. Angell,** president. The larger order will cover a three-year period and is for a newly developed engine for tractors, it is said. Production on this order will start next fall and the initial release will be for about $500,000 worth of the engines. The second order, it is stated, is for standard engines and has been placed by a commercial truck manufacturer, totaling $420,000, for immediate delivery.

An interesting development of the last few years has been that of the **Mid-West Abrasive Company,** here, organized in 1929. With 41 roadmen contacting the trade, it is now tooled to do a $1,500,000 volume of business in 1935. The organization is under the management of **J. T. Jackson,** president and **Morgan W. Burt,** vice president.

In a recent report, **Electromaster, Inc.,** manufacturers of electric ranges and water heaters, shows a 52 per cent increase in sales during the first quarter of 1935, in comparison with the same period a year ago. **R. B. Marshall** is present.

To satisfy the increasing demand for its products, the **Taylor-Winfield Corporation,** Warren, O., some time ago established a branch plant at 14304 Third Avenue, Highland Park, a suburb. Originally intended for service the branch has now developed into an important manufacturing division, according to **Walter Alderson,** vice president in charge of sales. The Taylor-Winfield Corporation, is a consolidation of the **Taylor Welder Company** and the **Winfield Electric Welding Machine Company,** the latter having been organized for nearly 40 years. F. J. H.

Chicago, Illinois

May 24, 1935.

The opening of new plants, recent new incorporations and better business in general is the trend of the metal industry in Chicago at the present time. Firms report an increased production during the late spring and are anticipating better business for the future.

The **Stewart Die Casting Corporation** has recently opened up a new plant in Bridgeport, Connecticut, to handle its eastern trade. **Sidney A. Hellings,** general manager of the Chicago company is in Bridgeport at the present time, directing the new branch which has been in operation about two months. The Bridgeport plant will manufacture the same line as the Chicago plant. The Chicago firm has noted a decided improvement in business at the present time.

March and April of the present year have brought about the best sales since late 1930, and a decided increase in orders, according to **E. W. Buck,** secretary-treasurer of the **Western Foundry Company.** This company now employs 400 men.

The **Calumet Brass Foundry** has seen a remarkable pick-up in business during the last three months, with a resulting increase in payroll, reports **W. G. Dolan,** a member and partner in the firm.

Three recently incorporated firms have appeared in this city. The **Jernberg Metal Products Company,** 201 North Wells Street, are manufacturing bearing metal products. The incorporators are: **C. Richard Jernberg, Minnie C. Jernberg** and **M. S. Steele.**

Cleanser Products, Incorporated, at 105 West Monroe Street, are dealing in manufacturing, refining, treating, improving, testing and preparing metal products for market. Incorporators are: **Eugene A. Howard, Lydia Belle Howard** and **G. H. Mason.**

William Romanoff of the **Kramer Metal Company,** is back after a several months stay in Florida, where he was recuperating from an illness. Mr. Romanoff became ill shortly after his return from attending a convention of the American Foundrymen's Association last fall.

Ornamental bronze and art glass, to be used in the main entrance at street level, are in the plans for the new Loop synagogue to be constructed at 16 South Clark Street. Included in the contemplated plans for remodelling of the Marshall Field and Company Annex building are nineteen bronze framed display windows, to be installed in the Washington Street entrance of the building. Aluminum marquees, marking the entrances, are in the plans, only recently completed, for the Goldblatt Brothers Department Store, who are erecting a $500,000 structure on the site of their present store in South Chicago. Window frames will also be of aluminum.

R. G. K.

Pacific States

Los Angeles, Calif.

May 24, 1935.

The **Metal Finishing Company** has gone into business at 1317 South Olive St., to do all kinds of finishing, plating, enameling, etc.

The **Incandescent Supply Company,** making lighting fixtures, have moved to 833 East 3d St.

The **Universal Brass Manufacturing Company,** making brass valves and plumbing supplies, have moved to 1520 East Slauson Ave.

The **National Engine Company** of Santa Ana, have moved to 5905 Hollywood Blvd, Los Angeles and will manufacture a light outboard motor; **William McCann,** president.

The **Nelli Art Bronze Company, Guido Nelli,** proprietor, is building a new foundry for art work at 3430 Union Pacific Ave., using the lost wax process.

The **Electric Luminous Sign Company** has moved to larger quarters, at 7117 Broadway.

The **Wilson Valve Company** is making a new non corrosive bronze valve.

The **Double Seal Ring Company** of 147 West Washington St., is largely working on the output of a special double seal ring.

Olds Alloys, Inc., have succeeded the **Pasadena Foundry** at Pasadena, 115 East Glenarm St., manufacturers of bearing bronze and brass, bronze and aluminum alloys.

The **Vortex Manufacturing Company** of Claremont is making a special air cleaner for trucks, engines and machinery.

The camp trailer business has quickly moved up to a major industry and is new and now of larger proportions. They are made mostly of steel but other metals, aluminum, some brass and bronze etc. are used.

The **K. W. Manufacturing Company** of Ontario, near here, is making a large line of fishing rods, reels, hooks, etc., also for hunting, made of steel, aluminum, brass, bronze, silver and gold.

Edward B. Harris of Hollywood has invented and started manufacturing a talking book for the blind. It is not a phonograph but can be made on a record or a film, made on copper or other materials. It is distributed to the blind by the Braille Institute of America, here at 741 North Vermont St.

The **Menasco Manufacturing Company** of 6714 McKinley Ave., is now specializing in making air plane engines, sound machinery for movies and precision machinery. They made their own aluminum alloys.

The **Metalite Manufacturing Company** of 1116 West Washington St., are now going heavily into the manufacture of stainless steel shingles, hospital furniture and equipment, aluminum cooking utensils and all kitchen lines. They are also spinning sheaves of aluminum alloy for various purposes.

The **Radiobar Company** are making a new radio to go with any piece of furniture or for the bar in any hotel.

The **Price & Pfister Manufacturing Company** now have a large plant at 2923 Humboldt St., making plumber's brass fittings.

The **Atlas Cage & Metal Novelty Works** at 6707 South Broadway, have a large factory making bird cages.

Bohan-McCoy Company have enlarged their factory at 3624 West Washington St., making fishing rods and other equipment.

The **Druge Brothers Manufacturing Company** of 2901 East 7th St., Oakland, have doubled their floor space and have added a die casting department, for the manufacture of tire inflators.—H. M. S.

Metal Market Review

May 27, 1935.

Metals as a whole were firm and fairly active.

Copper, (Blue Eagle) was unchanged throughout at 9.00c per pound for electrolytic but casting copper revealed the upward trend of the market, moving from 7.75 to 8.25. Foreign copper was active and higher, moving up to 8.475, c. i. f. European ports. Sales were consistently active but domestic copper quieted down during the week of May 20th. It was reported that France has agreed to buy 50,000 tons of copper from Chile.

Zinc was another metal to come back. Beginning at 4.10 it rose to a high of 4.30, at the time of writing, for Prime Western f. o. b. St. Louis. Buying was active in the early part of the month then slackened off a little, but not enough to restrain the market which maintained a firm undertone. World production during April totalled 120,476 short tons against 124,613 tons in March according to the American Bureau of Metal Statistics. American stocks of zinc went down 3,126 tons.

Tin was firm to strong but without any fireworks. For the first two weeks it moved narrowly between 50.35 and 50.90. In the third week it stepped up to 51 and then to 52.20. The situation is somewhat unsettled by the problems which may have to be faced if the McReynolds Bill should be passed (For a discussion of this bill, see editorial "America and Tin" on page 215 of this issue).

Lead was probably the strongest metal on the list. It closed last month at 3.60, f. o. b. St. Louis, was unchanged for the first ten days of May and then moved up at the rate of almost five points a day. At this time it stands at 4.10. Sales were brisk throughout, and this fact, together with a reduction of stocks in April of 8,537 tons, was responsible for the jump.

Aluminum showed no change, remaining at 22.

Nickel was unmoved at 35.

Antimony was unchanged for practically the whole period, seeming to have been pegged at 14.25. The price on May 24, however, dropped to 12.75 converting what had previously been a nominal quotation into an actual trading basis. The competition for domestic markets between Chinese and American antimony is keen, the American being quoted at 12.50.

Silver did a fair amount of cutting up as was to be expected, but not nearly so much as last month because of the fact that the Treasury made no changes in its quotations. The price curve moved from 75 at the beginning of the month down to 71.25, up again to 77 and the price at the time of writing is 76.125. The changes were of course, caused by speculative interests in London, China and India, who were trying to decide whether the United States would make another move along the lines of Secretary Morgenthau's statement that "the administration is endeavoring to restore silver to greater usefulness as monetary metal."

The Treasury ordered an embargo on foreign silver coins to aid those nations where the high price of silver has prompted the sale of coins for export.

Platinum held firm until about a week ago at $31, when it dropped a notch to $30.00 per ounce.

Gold was unmoved at $35.00 per ounce.

Scrap Metals were naturally strong in sympathy with the general metal market. Ingot demand expanded in the early part of the month and scrap aluminum, which was slow at the beginning, improved in the second week. Later, copper refiners increased their buying levels and secondary aluminum continued to stiffen while brass ingot orders slipped backward a little.

The Code Authority of the Ingot Brass and Bronze Industry reports that from reports made by the forty companies engaged in that industry, the combined shipments and deliveries of Ingot Brass and Bronze made during the calendar month of March, 1935, amounted to 5,014 tons.

Average prices per pound on commercial grades of six principal mixtures of Ingot Brass during the twenty-eight day period ending May 17:

Commercial 80-10-10 (1½% Imp.)	9.344c
Commercial 78% Metal	7.013c
Commercial 81% Metal	7.281c
Commercial 83% Metal	7.544c
Commercial 85-5-5-5	7.796c
Commercial No. 1 Yellow Brass	6.162c

Wrought Metals. Fabricated or semi-fabricated products showed little if any, change. The improvement in residential building has helped the distributors to a fair extent. Mills in the west have done well, benefitting from the automobile industry. New England plants also had a fair month, while business in the Metropolitan territory has been quite dull.

Daily Metal Prices for May, 1935

Record of Daily, Highest, Lowest and Average Prices and the Customs Duties

	1	2	3	6	7	8	9	10	13	14
Copper c/lb. Duty 4 c/lb.										
Lake‡ (del. Conn. Producers' Prices)	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125
Electrolytic‡ (del. Conn. Producers' Prices)	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Casting (f.o.b. ref.)	7.75	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.125	8.125
Zinc (f.o.b. East St. Louis) c/lb. Duty 1¼ c/lb.										
Prime Western (for Brass Special add 0.05)	4.10	4.10	4.10	4.20	4.20	4.20	4.20	4.20	4.20	4.20
Tin (f.o.b. N. Y.) c/lb. Duty Free, Straits	50.90	50.55	50.55	50.60	50.40	50.35	50.50	50.65	50.70	50.70
Lead (f.o.b. St. L.) c/lb. Duty 2½ c/lb.	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.65	3.65
Aluminum c/lb. Duty 4 c/lb.	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00
Nickel c/lb. Duty 3 c/lb.										
Electrolytic 99.9%	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Antimony (Ch.99%) c/lb. Duty 2 c/lb.	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25	14.25
Silver c/oz. Troy, Duty Free	75.00	71.25	72.50	73.00	72.875	71.375	71.25	72.125	73.75	74.875
Platinum $/oz. Troy, Duty Free	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Gold—Official Price[1] $/oz. Troy	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00

	15	16	17	20	21	22	23	24	High	Low	Aver.
Copper c/lb. Duty 4 c/lb.											
Lake‡ (del. Conn. Producers' Prices)	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125	9.125
Electrolytic‡ (del. Conn. Producers' Prices)	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Casting (f.o.b. ref.)	8.125	8.125	8.125	8.125	8.125	8.125	8.125	8.25	8.25	7.75	8.063
Zinc (f.o.b. East St. Louis) c/lb. Duty 1¼ c/lb.											
Prime Western (for Brass Special add 0.05)	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.30	4.30	4.10	4.208
Tin (f.o.b. N. Y.) c/lb. Duty Free, Straits	50.80	51.125	51.50	51.35	51.375	51.60	52.00	52.20	52.20	50.35	50.936
Lead (f.o.b. St. L.) c/lb. Duty 2½ c/lb.	3.70	3.75	3.75	3.80	3.95	4.10	4.10	4.10	4.10	3.60	3.742
Aluminum c/lb. Duty 4 c/lb.	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00
Nickel c/lb. Duty 3 c/lb.											
Electrolytic 99.9%	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Antimony (Ch.99%) c/lb. Duty 2 c/lb.	14.25	14.25	14.25	14.25	14.25	14.25	14.25	12.75	14.25	12.75	14.167
Silver c/oz. Troy, Duty Free	76.625	76.50	77.00	76.00	75.00	76.25	76.00	76.125	77.00	71.25	74.306
Platinum $/oz. Troy, Duty Free	31.00	31.00	31.00	30.00	30.00	30.00	30.00	30.00	31.00	30.00	30.722
Gold—Official Price[1] $/oz. Troy	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00

‡ Blue Eagle Copper. [1] United States Treasury price.

Due to going to press a week early in order to be in good time for the Electro-Platers' Convention, this record of prices goes only through May 24th. The balance of the May prices will appear in our July issue.

Metal Prices, May 24, 1935

(Import duties and taxes under U. S. Tariff Act of 1930, and Revenue Act of 1932)

NEW METALS

Copper: Lake, 9.125, Electrolytic, 9.00, Casting, 8.25. **Zinc:** Prime Western, 4.30. Brass Special, 4.40. **Tin:** Straits, 52.20. Pig 99%, 51.625. **Lead:** 4.10. **Aluminum,** 22.00. **Antimony,** 12.75. **Nickel: Shot, 36. Elec., 35.**

Quicksilver: Flasks, 75 lbs., $73.00. **Bismuth,** $1.10. **Cadmium,** 65: **Silver,** Troy oz., official price, N. Y., May 27, 75.50c. **Gold:** Oz. Troy, Official U. S. Treasury price, May 27, $35.00. **Scrap Gold,** 6¾c. per pennyweight per karat, dealers' quotation. **Platinum,** oz. Troy, $30.00.

Duties: Copper, 4c. lb.; zinc, 1¾c. lb.; tin, free, lead, 2½c. lb.; aluminum, 4c. lb.; antimony, 2c. lb.; nickel, 3c. lb.; quicksilver, 25c. lb.; bismuth, 7½%; cadmium, 15c. lb.; cobalt, free; silver, free; gold, free; platinum, free.

INGOT METALS AND ALLOYS

	Cents lb.	U. S. Import Duty	Tax*
Brass Ingots, Yellow	6¾ to 7⅞	None	4c. lb.[1]
Brass Ingots, Red	8 to 11	do	do
Bronze Ingots	9 to12¼	do	do
Aluminum Casting Alloys	15½to22	4c. lb.	None
Manganese Bronze Castings	20 to34	45% a. v.	3c. lb.[2]
Manganese Bronze Forgings	26 to38	do	do
Manganese Bronze Ingots	9 to13	do	4c. lb.[1]
Manganese Copper, 30%	11½to16	25% a. v.	3c. lb.[2]
Monel Metal Shot or Block	28	do	None
Phosphor Bronze Ingots	10 to12	None	4c. lb.[1]
Phosphor Copper, guaranteed 15%	13¼to15	3c. lb.[2]	do
Phosphor Copper, guaranteed 10%	11½to14	do	do
Phosphor Tin, no guarantee	61to75	None	None
Silicon Copper, 10%	18 to30	45% a. v.	4c. lb.[1]
Iridium Platinum, 5%	$32.—	None	None
Iridium Platinum, 10%	$33.—	None	None

*Duty is under U. S. Tariff Act of 1930; tax under Section 60 (7) of Revenue Act of 1932.
[1]On copper content. [2]On total weight. "a. v." means ad valorem.

OLD METALS

Dealers' buying prices, wholesale quantities:	Cents lb.	Duty	U. S. Import Tax
Heavy copper and wire, mixed	6⅜to 6⅝	Free	4c. per pound on copper content.
Light copper	5½to 5¾	Free	
Heavy yellow brass	3⅜to 3⅝	Free	
Light brass	3 to 3⅛	Free	
No. 1 composition	4⅞to 5⅛	Free	
Composition turnings	4⅝to 4⅞	Free	
Heavy soft lead	3 to 3¼	2⅛c.lb.	None.
Old zinc	2¼to 2⅜	1½c.lb.	
New zinc clips	2¾to 3	1½c.lb.	
Aluminum clips (new, soft)	12¼to13¼	4c.lb.	
Scrap aluminum, cast	9¼to10	4c.lb.	
Aluminum borings—turnings	5 to5½	4c.lb.	
No. 1 pewter	30 to32	Free	
Electrotype or stereotype	2⅞to3	2⅛c. lb.*	
Nickel anodes	30 to33	10%	
Nickel clips, new	31 to33	10%	
Monel scrap	11 to18½	10%a.v.	

*On lead content.

Wrought Metals and Alloys

The following are net BASE PRICES per pound, to which must be added extras for size, shape, quantity, packing, etc., or discounts, as shown in manufacturers' price lists, effective since November 24, 1934. Basic quantities on most rolled or drawn brass and bronze items below are from 2,000 to 5,000 pounds; on nickel silver, from 1,000 to 2,000 pounds.

COPPER MATERIAL

	Net base per lb.	Duty*
Sheet, hot rolled	16c.	2½c. lb.
Bare wire, soft, less than carloads	12.75c.	25% a. v.
Seamless tubing	16.25c.	7c. lb.

*Each of the above subject to import tax of 4c. lb. in addition to duty, under Revenue Act of 1932.

BRASS AND BRONZE MATERIAL

	Yellow Brass	Red Brass 80%	Comm'l. Bronze	Duty	
Sheet	14¼c.	15¼c.	16	4c. lb.	U. S. Import Tax 4c. lb. on copper content.
Wire	14¾c.	15¾c.	16½	25%	
Rod	12¾c.	15¾c.	16⅜	4c. lb.	
Angles, channels	22¼c.	23½c.	24	12c. lb.	
Seamless tubing	16 c.	16¾c.	17⅜	8c. lb.	
Open seam tubing	22¼c.	23½c.	24	20% a. v.	

NICKEL SILVER

Net base prices per lb. (Duty 30% ad valorem.)

Sheet Metal		Wire and Rod	
10% Quality	23.50c.	10% Quality	26.375c.
15% Quality	25.625c.	15% Quality	30.75c.
18% Quality	26.875c.	18% Quality	34.00c.

TOBIN BRONZE AND MUNTZ METAL

(Duty 4c. lb.; import tax 4c. lb. on copper content.)

Net base prices per pound.	
Tobin Bronze Rod	16¼c.
Muntz or Yellow Rectangular and other sheathing	17⅜c.
Muntz or Yellow Metal Rod	13¾c.

ALUMINUM SHEET AND COIL

(Duty 7c. per lb.)

Aluminum sheet, 18 ga., base, ton lots, per lb. 32.80
Aluminum coils, 24 ga., base price, tons lots, per lb.....30.50

ROLLED NICKEL SHEET AND ROD

Duty 25% ad valorem, plus 10% if cold worked.)

Net Base Prices

Cold Drawn Rods .....50c. Cold Rolled Sheet .....60c.
Hot Rolled Rods .....45c. Full Finished Sheet .....52c.

MONEL METAL SHEET AND ROD

Duty 25% ad valorem, plus 10% if cold worked.)

Hot Rolled Rods (base) ....35 Full Finished Sheets (base) 42
Cold Drawn Rods (base) ...40 Cold Rolled Sheets (base) 50

SILVER SHEET

Rolled sterling silver (May 27) 75½c. per Troy oz. upward according to quantity. (Duty, 65% ad valorem.)

ZINC AND LEAD SHEET

	Cents per lb. Net Base	Duty
Zinc sheet, carload lots, standard sizes and gauges, at mill, less 7 per cent discount	9.50	2c. lb.
Zinc sheet, 1200 lb. lots (jobbers' price)	10.25	2c. lb.
Zinc sheet, 100 lb. lots (jobbers' price)	14.25	2c. lb.
Full Lead Sheet (base price)	7.25	2⅜c. lb.
Cut Lead Sheet (base price)	7.50	2⅜c. lb.

BLOCK TIN, PEWTER AND BRITANNIA SHEET

(Duty Free)

This list applies to either block tin or No. 1 Brittannia Metal Sheet, No. 23 B. & S. Gauge, 18 inches wide or less; prices are all f. o. b. mill:

500 lbs. or over .....15c. above N. Y. pig tin price
100 to 500 lbs. .....17c. above N. Y. pig tin price
Up to 100 lbs. .....25c. above N. Y. pig tin price
Up to 100 lbs. .....25c. above N. Y. pig tin price

Supply Prices on page 232.

Supply Prices, May 24, 1935

ANODES

Prices, except silver, are per lb. f.o.b., shipping point, based on purchases of 500 lbs. or more, and subject to changes due to fluctuating metal markets.

Copper: Cast ..... 16½c. per lb.
Electrolytic, full size, 14c.; cut to size 14c. per lb.
Rolled oval, straight, 14½c.; curved, 15½c. per lb.
Brass: Cast ..... 14½c. per lb.
Zinc: Cast ..... .08⅞c. per lb.
Nickel: 90-92% ..... .45 per lb.
95-97% ..... .46 per lb.
99%+cast, 47c.; rolled, depolarized, 48.
Silver: Rolled silver anodes .999 fine were quoted May 27, from 78¾c. per Troy ounce upward, depending upon quantity.

WHITE SPANISH FELT POLISHING WHEELS

Diameter	Thickness	Under 50 lbs.	50 to 100 lbs.	Over 100 lbs.
10-12-14 & 16	1" to 2"	$2.95/lb.	$2.65/lb.	$2.45/lb.
10-12-14 & 16	2 to 3½	2.85	2.55	2.35
6-8 & over 16	1 to 2	3.05	2.75	2.55
6-8 & over 16	2 to 3½	3.00	2.70	2.45
6 to 24	Under ½	4.25	3.95	3.75
6 to 24	½ to 1	3.95	3.65	3.45
6 to 24	Over 3½	3.35	3.05	2.85
		Any Quantity		
4 to 6	Under ½,	$5.00	½-1, $4.85	1 to 3, $4.75
1½ to 4	"	5.55	" 5.40	" 5.35
1 to ½	"	5.85	" 5.70	" 5.60

Extras: 25c per lb. on wheels, 1 to 6 in. diam., over 3 in. thick.
On grey Mexican wheels deduct 10c. per lb. from above prices.

COTTON BUFFS

Full disc open buffs, per 100 sections when purchased in lots of 100 or less are quoted:

16" 20 ply 84/92 Unbleached	$80.12
14" 20 ply 84/92 Unbleached	61.43
12" 20 ply 84/92 Unbleached	46.21
16" 20 ply 80/92 Unbleached	67.00
14" 20 ply 80/92 Unbleached	51.47
12" 20 ply 80/92 Unbleached	38.80
16" 20 ply 64/68 Unbleached	59.18
14" 20 ply 64/68 Unbleached	45.48
12" 20 ply 64/68 Unbleached	34.35

⅛" Sewed Buffs, per lb., bleached or unbleached 49c. to 1.12

CHEMICALS

These are manufacturers' quantity prices and based on delivery from New York City.

Acetone C. P.	lb.	.13½-.16
Acid—Boric (Boracic) granular, 99½+% ton lots	lb.	.04½-.05
Chromic, 400 or 100 lb. drums		.15¾
Hydrochloric (Muriatic) Tech., 20 deg., carboys	lb.	.03
Hydrochloric, C. P., 20 deg., carboys	lb.	.06½
Hydrofluoric, 30%, bbls.	lb.	.07-.08
Nitric, 36 deg., carboys	lb.	.05-.06¼
Nitric, 42 deg., carboys	lb.	.07-.08
Sulphuric, 66 deg., carboys	lb.	.02
Alcohol—Butyl, drums	lb.	.13½-.14½
Denatured, drums	gal.	.475-.476
Alum—Lump, barrels	lb.	.03¼-.04
Powdered, barrels	lb.	.03½-.05
Ammonia, aqua, com'l., 26 deg., drums, carboys	lb.	.02½-.05
Ammonium—Sulphate, tech., bbls.	lb.	.03½-.05
Sulphocyanide, technical crystals, kegs	lb.	.55-.58
Arsenic, white kegs	lb.	.04½-.05
Asphaltum, powder, kegs	lb.	.23-.41
Benzol, pure, drums	gal.	.41
Borax, granular, 99½+%, ton lots	lb.	.02¼-.02¾
Cadmium oxide, 50 to 1,000 lbs.	lb.	.65
Calcium Carbonate (Precipitated Chalk), U. S. P.	lb.	.05¾-.07½
Carbon Bisulphide, drums	lb.	.05½-.06
Chrome, Green, commercial, bbls.	lb.	21½-23½
Chromic Sulphate, drums	lb.	.33-.55
Copper—Acetate (Verdigris)	lb.	.21
Carbonate, 53/55% cu., bbls.	lb.	.14½-.16½
Cyanide (100 lb. kgs.)	lb.	.38-.40
Sulphate, tech., crystals, bbls.	lb.	4.55-5c.
Cream of Tartar Crystals (Potassium Bitartrate)	lb.	.20¼-.20½
Crocus Martis (Iron Oxide) red, tech., kegs.,	lb.	.07
Dextrin, yellow, kegs	lb.	.05-.08
Emery Flour	lb.	.06
Flint, powdered	ton	30.00
Fluorspar, bags	lb.	.03½
*Gold Chloride	oz.	$18¼-23
Gum—Sandarac, prime, bags	lb.	.50
Shellac, various grades and quantities	lb.	.21-.31
Iron Sulphate (Copperas), bbls.	lb.	.01½
Lead—Acetate (Sugar of Lead), bbls.	lb.	.10-.13½
Oxide (Litharge), bbls	lb.	.12½
Mercury Bichloride (Corrosive Sublimate)	lb.	$1.58
Methanol, (Wood Alcohol) 100% synth., drums	gal.	.42½
Nickel—Carbonate, dry, bbls.	lb.	.35-.41
Chloride, bbls.	lb.	.18-.22
Salts, single, 425 lb. bbls.	lb.	.13-.14
Salts, double, 425 lb. bbls.	lb.	.13-.14
Paraffin	lb.	.05-.06
Phosphorus—Duty free, according to quantity	lb.	.35-.40
Potash Caustic Electrolytic 88-92% broken, drums	lb.	.07¼-.08½
Potassium—Bichromate, casks (crystals)	lb.	.08⅝
Carbonate, 96-98%	lb.	.08¾
Cyanide, 165 lbs. cases, 94-96%	lb.	.57½
Gold Cyanide	oz.	$15.45*
Pumice, ground, bbls.	lb.	.02½
Quartz, powdered	ton	$30.00
Rosin, bbls.	lb.	.04½
Rouge—Nickel, 100 lb. lots	lb.	.08
Silver and Gold	lb.	.65
Sal Ammoniac (Ammonium Chloride) in bbls.	lb.	.05-.07½
*Silver—Chloride, dry, 100 oz. lots	oz.	*
Cyanide, 100 oz. lots	oz.	.67½
Nitrate, 100 ounce lots	oz.	*
Soda Ash, 58%, bbls.	lb.	.0252
Sodium—Cyanide, 96 to 98%, 100 lbs.	lb.	.17½-.22
Beryllium fluoride ($2NaF.BeF_2$)	lb.	4.30-7.00
Gold Cyanide	oz.	$17.10*
Hyposulphite, kegs, bbls.	lb.	.03½-.06½
Metasilicate, granular, bbls.	lb.	3.55-3.70
Nitrate, tech., bbls.	lb.	.02¼
Phosphate, tribasic, tech., bbls.	lb.	.0385
Silicate (Water Glass), bbls.	lb.	.01½
Stannate, drums	lb.	.34-.37
Sulphocyanide, drums	lb.	.30-.45
Sulphur (Brimstone), bbls.	lb.	.02
Tin Chloride, 100 lb. kegs	lb.	.39
Tripoli, powdered	lb.	.03
Trisodium Phosphate—see Sodium Phosphate.		
Wax—Bees, white, ref. bleached	lb.	.60
Yellow, No. 1	lb.	.45
Whiting, Bolted	lb.	.02½-.06
Zinc—Carbonate, bbls.	lb.	.11-.12
Cyanide (100 lb. kegs)	lb.	.38
Chloride, drums, bbls.	lb.	.07½-.10
Sulphate, bbls.	lb.	.03-.037

*Gold and silver products subject to fluctuations in metal prices.

METAL INDUSTRY

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